PROTECTING PEOPLE AND NATURAL RESOURCES

A COHESIVE FUELS TREATMENT STRATEGY

U.S. Department of the Interior

USDA Forest Service

USDA Forest Service
Bureau of Indian Affairs · Bureau of Land Management
National Park Service · Fish and Wildlife Service

February 2006

President Bush announces his Healthy Forests Initiative at the site of the Squires Fire, near Medford, Oregon, August 22, 2002.

"...I want to emphasize the fact that through good forest management we can do a better job of containing fire ....and we're going to make sure that if there is a fire, it does as little damage as possible."

President George W. Bush,
Remarks made at Rocky Mountain National Park, Colorado, August 14, 2001

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Background and Scope

Fires in our public forests and on our public rangelands now threaten people, communities, and natural resources in ways never before seen in our nation's history. Today's forests contain previously unrecorded levels of fuel, while highly flammable invasive species now pervade many rangelands. They do so because decades of fire exclusion policies and other land management actions altered fire's historic role in shaping plant communities.

The geographic scope of the fire-fuels problem is enormous, with estimates exceeding 180 million acres of Federal lands at risk from unusually severe fires. A key part of the solution lies in strategically reducing the amount of fuel on both public and private lands in order to protect people and communities and improve land condition.

> "Scientists do not dispute the need to reduce the risk of fire. The problem is well understood. Fires need heat, oxygen, and fuel to burn….Of these factors, only fuel can be controlled. The solution to the forest fire fuel problem is well known: active or intensive forest management to reduce fuel accumulation."
>
> Jay O'Laughlin, Professor
> Department of Forest Resources
> University of Idaho
>
> "Federal Land Policy: Programs to Reduce Wildland Fire Risk and Improve Forest Ecosystem Health Must Overcome Barriers to Active Resource Management," 2000

The problem has been building across the landscape for decades. We must make choices about where and how to reduce fuel loadings in order to lower the risks to communities and the environment from catastrophic fires. We must evaluate the effectiveness and efficiency of our efforts, and we must make mid-course corrections as we gain new understanding.

Congress, the Administration, States, Tribes, local governments, and many others throughout the country recognize that this is a long-term challenge requiring a strategic plan to lessen risks to people and restore forest and rangeland health by addressing hazardous fuel build up on public lands.

Mission

The mission of the strategy is to lessen risks from catastrophic wildfires by reducing fuels build-up in forests and woodlands and by reducing threats from flammable invasive species on rangelands in the most efficient and cost effective manner possible. The strategy will result in fewer large, catastrophic fires and less damage from those that do occur than would otherwise be the case, vegetative conditions in which some fires will be used to fulfill appropriate ecological functions, and the establishment of viable infrastructure capable of improving and maintaining desired land conditions over the long term.

By providing a succinct and integrated presentation of policy and management objectives and methods, the strategy will help relevant parties achieve risk reduction and resource management goals.

Influences on the Strategy

Multiple factors influence the strategy. Among them are available resources, information, legal and regulatory factors, and our ability to engage the private sector. The strategy assumes a landscape in constant flux regarding human settlement and land use, composition of vegetative communities, and elements impacting fire likelihood and behavior.

- For fiscal years 2001-2005, the President and Congress agreed to invest over $2 billion in fuels treatments. With hazardous fuel conditions so widespread, Federal funds must be leveraged with State, Tribal, local government, and private sector efforts.

- Constantly improving understanding via activities like LANDFIRE, improved modeling, and expanding community planning help us to better identify and prioritize fuels treatments.

- Before treatments can be carried out on the

landscape they must often pass through a maze costly and at times counter-productive process requirements flowing from a variety of Federal and State statutes including: the National Environmental Policy Act (NEPA), Clean Air Act, Endangered Species Act (ESA) and the National Historic Preservation Act.

The Administration addressed many process issues by maximizing use of paperwork reduction methods provided for in NEPA and streamlining other processes such as interagency consultations under the ESA.

- Congress has likewise acted. In December 2003, both the House and Senate overwhelmingly passed the Healthy Forests Restoration Act (HFRA) to facilitate removal of hazardous fuels by, among other things, limiting the extent of NEPA analysis required for certain fuels treatments as well as limiting the use of appeals and litigation to oppose projects.

Stewardship Contracting at Apache-Sitgreaves National Forest

In August 2004 the Forest Service awarded a 10-year stewardship contract covering biomass services on up to 150,000 acres in the Apache-Sitgreaves NF in Arizona.

Under the contract, various mechanical fuels treatments will yield woody biomass for use by a local enterprise.

Material removed from the forests will provide raw material inputs for the manufacture of wood pellets for fuel, animal bedding, and densified logs for wood stoves, among other products.

- Expanding private sector involvement is critical to program success. As a contract work force and as consumers of biomass removed during fuels treatments, the private sector plays a fundamental role in the program. The Administration has taken several steps to promote their efforts, including streamlining contracting procedures, publicizing the availability of biomass, and (with congressional authorization) launching an expanded stewardship contracting program.

- People increasingly move into landscapes subject to wildland fire. The juxtaposition of people and heavy fuel loads at once heightens the need to remove fuels while sometimes limiting options. Using prescribed fire to treat fuels near homes, for example, may be considered too risky for much of the year and its smoke may cause concern for nearby residents.

- Uncertainties limit predictive capacity and necessitate program flexibility. Uncertainties reside in the dynamic nature of factors relevant to fire occurrence, fire severity, and-project selection. They include weather, moisture conditions, changing settlement patterns, and insect and disease infestations. This dynamic setting requires a cohesive fuels strategy that is adaptable to shifting circumstances.

Principles of the Strategy

Four principles guide the strategy:

- Prioritization
- Coordination
- Collaboration
- Accountability

Prioritization

The President and the Congress have given clear direction that priority in the fuels treatment program should focus on two key areas. First, priority should be given to the wildland urban interface (WUI)—places where people have settled in forests, woodlands, shrublands, and grasslands. Here, people, their structures, and their work face the greatest threats.

Second, outside the WUI, priority treatments must concentrate on sites where vegetation is most likely to support catastrophic fires that threaten vital resources or locations of particular value to local communities. In addition, non-WUI treatments must be applied to areas where fuel loads could quickly increase to dangerous levels without active management.

Coordination

Federal land management agencies conduct a variety of land management activities affecting the composition and distribution of hazardous fuels across the landscape. These include fuels reduction, timber sales, insect and disease eradication, habitat improvement, watershed improvement and

other vegetation management activities. Coordinating these activities to maximize their combined benefits toward overall fuels management objectives and accounting for their contributions to fuels management accomplishments is essential to achieving a well coordinated fuels management program.

Collaboration

The President and the Congress have given clear direction regarding the vital nature of collaboration among Federal, State, Tribal, and local governments, as well as other partners. In August 2001 and May 2002, Federal, State, Tribal and local government representatives, along with other key partners, completed a 10-Year Comprehensive Strategy and Implementation Plan to lay out principles and objectives, assign roles and responsibilities, and establish performance measures. These same partners also established an interagency and intergovernmental body to provide direction and oversight. In January 2003, the Wildland Fire Leadership Council (WFLC) signed an agreement on fuels treatment project selection. Later that year, HFRA reinforced an earlier congressional call for cooperation, especially with its requirement for the development of Community Wildfire Protection Plans. As a result, each year's program of work increasingly reflects input from, and priorities of, local, Tribal, and State interests.

Accountability

The strategy builds in accountability. Administratively, the WFLC brings together Federal, State, Tribal, and local government leaders to provide overall coordination for the fire and fuel programs. The WFLC, using agreed upon effectiveness and efficiency measures, tracks progress in reducing hazardous fuels in a national database and reports this information in the Healthy Forests Report while new measures that reflect lessons learned and emerging research are being examined. A WFLC-approved monitoring plan and state-of-the-art geographic information system, called LANDFIRE, assure continued improvement in our ability to systematically track and support program planning, implementation, and effectiveness.

Benefits of the Strategy

The strategy benefits people, communities, and the environment.

At current funding levels, it guides removal of hazardous fuels on over 4 million acres of land each year, including over 1.5 million acres in the wildland urban interface. As a direct result, hundreds of thousands of acres annually move to a better fire regime condition class, others are maintained in a desirable condition, and all see a reduction in their fuel loads. Well over a thousand communities are better protected.

People and communities gain because implementation:

- Increases firefighter and public safety;
- Reduces threats to homes, schools, business, and other valuable infrastructure;
- Conserves municipal watersheds;
- Helps preserve jobs dependent on natural resources;
- Upholds environmental quality;
- Enhances effective use of Federal, State, Tribal, and local skills and resources; and
- Lowers the threat of air pollution from particulates.
- Reduce uncontrollable smoke from wildfire.

Environmental conditions improve because implementation:

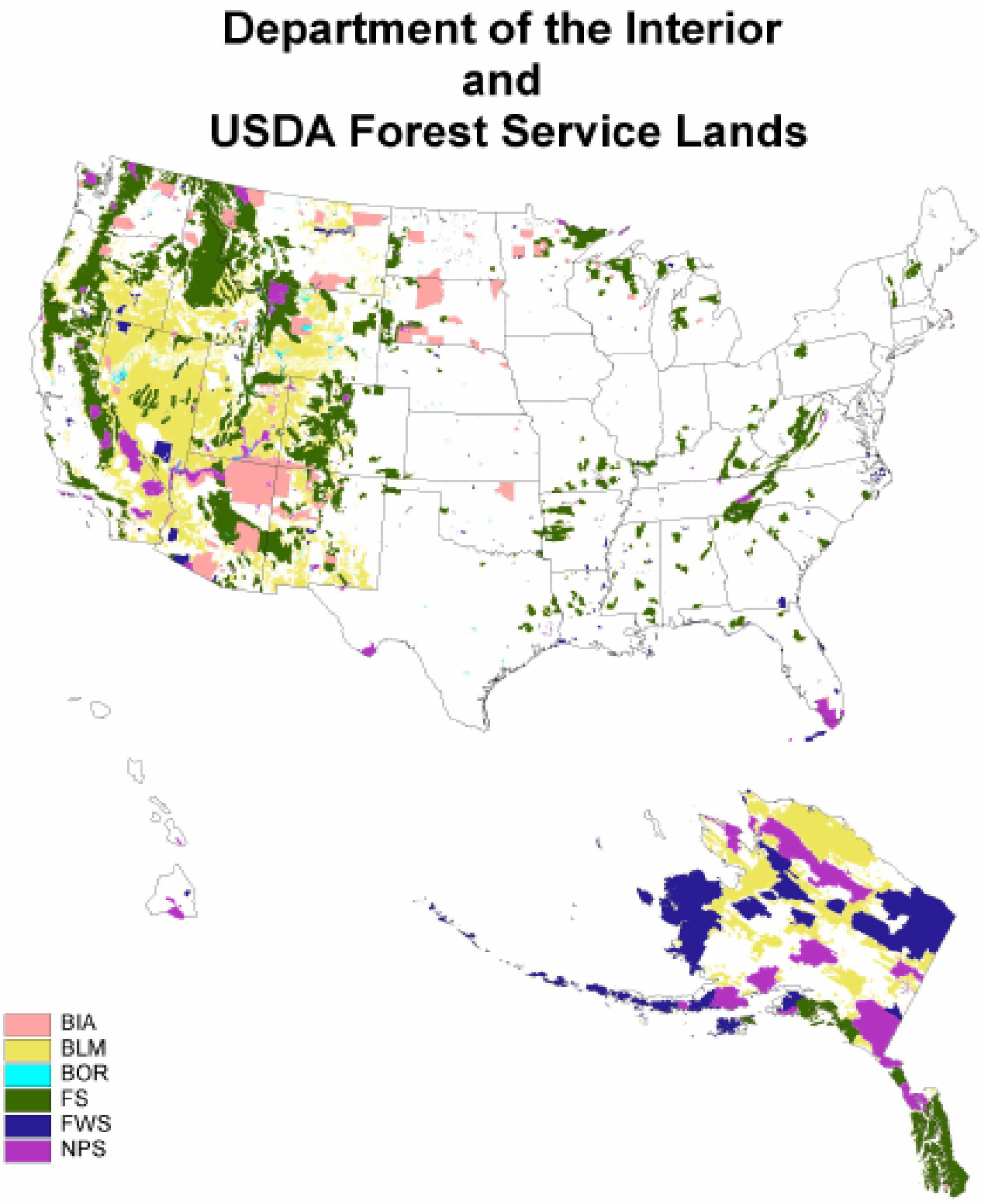
- Limits mortality in wildlife, plants, and microorganisms;
- Prevents excessive fire damage to soils;
- Reduces soil erosion;
- Cuts siltation of streams, lakes, and wetlands;
- Safeguards spawning grounds and critical wildlife habitat;
- Protects air and water quality; and
- Expands opportunities for beneficial uses of wildland fire.
- Smoke impacts can be managed to protect air quality.

Our actions will yield significant tangible benefits to people and natural resources.

When Will We Be Done?

Consequently, the success of this strategy will not be attributed to completion of annual acreage targets, although current performance measures center on that metric. There is no identifiable number of acres-to-be-treated that, once reached, would enable us to claim victory. The strategy looks to more effectively and efficiently place fuels reduction treatments across the landscape using a collaborative process supported by an increased scientific understanding of fire behavior and effects and improved

data collection and analysis to optimize the effectiveness of treatments for restoration and fire protection goals. Through these efforts, we expect to ensure that fuel project investments are cost-effectively allocated to achieve risk reductions that will increase the benefits and reduce the costs associated with wildland fire.



FEDERAL STEWARDSHIP LANDS – The Department of the Interior: Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), Bureau of Reclamation (BOR), U.S. Fish and Wildlife Service (FWS), and National Park Service (NPS). USDA: Forest Service (FS). The Cohesive Fuels Treatment Strategy focuses on these Federal lands within the coterminous United States (excluding Alaska and Hawaii).

Figure 1

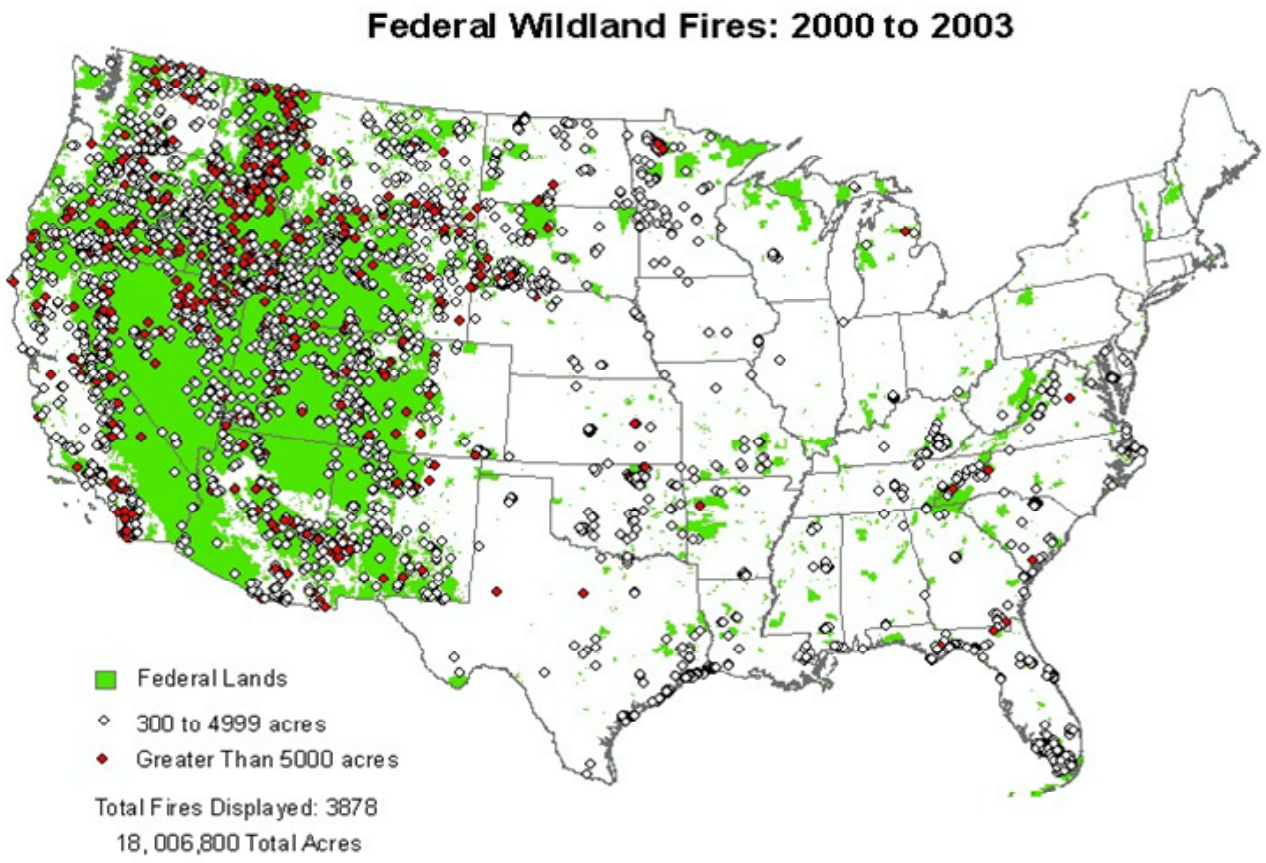


Figure 2

- An estimated two-thirds of Federally managed wildlands in the lower 48 states are now at an elevated risk of unusually destructive wildland fire.
- In the years 2000 to 2004, Alaska, Arizona, California, Colorado, New Mexico, and Oregon have each experienced record-breaking wildland fires.

1 Mission Statement

"We cannot bury our heads in the sand any longer. Los Alamos, Flagstaff, Storm King – western forest landscapes and human communities have been ravaged by preventable catastrophic fires.... Knowing what we know now, we must act....To do otherwise would be an abdication of our responsibility to future generations."

W. Wallace Covington
Regents Professor and Director of the Ecological Restoration Institute, University of Northern Arizona
Journal of Forestry, 2000

The Cohesive Fuels Treatment Strategy aims to lessen risks from catastrophic wildfires by reducing hazardous fuels build-up in forests and woodlands, and by reducing threats from flammable invasive species in rangelands, with an emphasis on protecting communities.

Stewardship of our public forests and rangelands demands that we address the conditions that produce uncharacteristically destructive wildfires that threaten people, our quality of life, and the public's natural resources while recognizing some fires may result in net benefits.

Stewardship requires active management to change the combustibility of the landscape to enhance our ability to fight fires we do not want, to lessen their impacts where they do occur, and to create situations where desirable fires may be permitted to play an appropriate role in shaping plant communities and maintaining fire-dependent species.

We know the source of the increased fire threat in our forests—an excessive build-up of fuels resulting from decades of successful fire suppression coupled with a significant curtailment of proactive vegetative management, and the extension of urban settlement into wildland environments. Rangelands suffer similar threats from flammable invasive species.

Reducing risks of unwanted impacts of wildfires requires a mix of actions as set out in the May 2002 plan, *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy.* This comprehensive strategy includes 1) improving targeted fire prevention and suppression; 2) reducing hazardous fuels; 3) restoring fire-adapted ecosystems; and 4) involving communities in reducing risks from wildfires.
The three principles of prioritization, collaboration, and accountability guide our efforts to achieve these four goals.

This document, *Protecting People and Natural Resources: A Cohesive Fuels Treatment Strategy,* focuses on goals two, three, and four of the *10-Year Comprehensive Strategy*, and outlines a coordinated approach to fuels treatment adopted by the five major Federal land-managing agencies in the Departments of Agriculture and the Interior: the Bureau of Indian Affairs, Bureau of Land Management, Fish and Wildlife Service, Forest Service, and National Park Service.

II Principles of the Cohesive Fuels Treatment Strategy

"[I]t is folly to rely on fire suppression alone and to largely ignore the need to employ other essential tools such as prescribed fire, thinning, slash removal, other fuel treatments, and making forest homes more fire resistant."

Stephen Arno, Research Forester and
Steven Allison-Bunnell, Science Writer
Flames in Our Forest, 2002

This document provides a strategic and realistic approach for reducing fuels on Federal lands by focusing on specific goals that address the multiple factors that influence fuels treatments.

In a given year, Federal dollars can support a finite number of fuels treatments covering a fraction of the acres at high risk from unusually severe fires. The strategy points the way to picking which acres to treat and treatment methods to use, and does so in ways that address multiple concerns voiced by various segments of society.

Role of Science and Information

Scientific understanding and the widespread availability of relevant information play a central role in the strategy. Science tells us that many of today's landscapes contain fuel loads that hold within them the seeds of unacceptably destructive wildland fires. Science tells us that reducing hazardous fuels is the best way to change the combustibility of large portions of the landscape. Scientists are beginning to develop approaches to help identify how best to pattern our fuels treatments to achieve the desired impact on fire behavior and impacts.

Beginning in 2005, the LANDFIRE program will begin to produce an extensive set of nationally consistent geographic data vital to program planning and development. LANDFIRE uses repeatable, peer-reviewed methods to provide a large suite of maps, data, and tools essential to better undertake hazardous fuels and other land management work. These data and maps include: fuel loading, vegetation type and structure, fire regime condition class, and dozens of other variables. They will be available on the web for use by our State, Tribal, and local partners.

Reducing Risk in the Wildland Urban Interface

In passing HFRA Congress once again emphasized the need to treat land in and near the expanding wildland urban interface (WUI). It called for preparation of Community Wildfire Protection Plans (CWPPs) to guide the process. The President likewise emphasized protecting the WUI, places on the landscape where humans have built within forests, woodland, shrubland, and rangeland environments, as well as priority watersheds and other vital areas associated with human habitation. Here, severe wildland fires pose the greatest threat to human well-being, and it is here where we concentrate most of our efforts—more than 65 percent of fuels treatment dollars and over 50 percent of total treated acres during 2001-2004.

Depending on local circumstances, as areas around communities are treated, the margin of safety for increasing the use of wildland fires in more remote areas also increases. This, in turn, can help to reduce suppression costs as well as damages to communities.

Reducing Risks by Working Beyond the Wildland Urban Interface

Treating WUI acres alone will not allow us to achieve the wide range of human and natural resource benefits expected of the program. The catastrophic fires of 2002—Hayman (Colorado), Rodeo-Chediski (Arizona), and Biscuit (Oregon-California)—that caused so much damage and disruption in WUI areas began miles beyond the WUI where excessive fuel loadings had accumulated.

LANDS DEGRADED BY WILDLAND FIRE—
Uncharacteristically severe wildland fire resulting from a combination of fuel accumulation and drought has resulted in the near total removal of live vegetation and surface organic matter that is necessary to protect underlying soils from erosion.

Figure 3

Figure 4

AT RISK—
Both communities and natural resources are at risk from the effects of increased hazardous fuels.

Figure 5

HIGH-SEVERITY FIRE—
Uncharacteristically severe wildland fire often results in both short- and long-term losses of habitat and soil productivity.

Figure 6

The effects of greatly increased forest densities on natural resources also provide compelling reasons to apply strategically located fuels treatments on non-WUI areas. As a result of fire exclusion policies and insufficient vegetation management treatments, some forests in the West now display tree densities many times those of pre-suppression forests, with harmful consequences for wildlife and biological diversity.

Given the amount of non-WUI land requiring a reduction in fuel loads and the finite resources available, managers must prioritize. This strategy stresses treating areas in Fire Condition Classes 2 and 3 within Fire Regime Groups I, II, and III, where fuel build-up is the greatest and risk- reduction benefits to people and property are highest. It further prioritizes treatments in these areas to focus first on treating municipal watersheds, key habitat areas near key infrastructure, and areas experiencing or imminently threatened by insect and disease infestations that could significantly increase fire risks. This is especially true in the West. Yet it recognizes that all regions of the country do not face the same kind of threats from wildland fire. In the South, where vegetation grows quickly, prudence dictates treating a greater proportion of Fire Condition Class 1 lands to prevent their rapid decline into a less favorable fire/fuels status, especially in areas of expansive or expanding wildland urban interface.

Thinning in a stand of ponderosa pine, Eagle Lake Ranger District, Lassen National Forest, 2002. The top photo shows a pre-treatment density of over 300 trees per acre, while the treated stand in the lower photo has a density of approximately 100 trees per acre.

Figures 7-8

Making Use of Wildland Fire

Another type of fuels treatment occurs on a more limited basis, but is increasingly being used as a cost-effective means of fuels treatment. When a wildland fire ignition occurs in an area that has a fire management plan and a land use plan that permit fire to continue to spread in a defined area under appropriate conditions, managers may allow the fire to continue to burn. Managers evaluate these wildland fires daily to determine if they should be fought or monitored.

Recently, planning efforts by Federal land managers identified over 150 million acres in the contiguous states where wildland fire use is appropriate under specified conditions. In addition, tens of million acres in Alaska fall into a similar category.

Finding the proper mix of treatments in any given year and place requires blending science, land management experience, and regional and local needs, using collaboration with our partners to help prioritize projects.

Collaboration

The President, in his *Healthy Forests Initiative*, and Congress, in 2001 appropriations language and again in HFRA, have both emphasized collaboration and noted the vital nature of local decision making in the fuels treatment effort.

Collaboration takes many forms. Federal agencies have assisted in the preparation of thousands of community fire-related planning efforts. State or local fire services may be the first responders to wildfire ignitions on Federal lands. The Firewise pro-

gram—a partnership of Federal agencies, Federal Emergency Management Administration, International Association of Fire Chiefs, National Association of Fire Marshals, National Association of State Foresters, National Emergency Management Association, and the National Fire Protection Association—assists communities and home owners in risk reduction and has certified communities in twenty-six states as "Firewise."

Through tools like LANDFIRE and the National Fire Program Operations and Reporting System (NFPORS), the Federal government provides consistent data and fuels treatment reporting to our partners. The states have the lead in State and community-level planning (including the CWPPs called for in HFRA), in identifying communities at risk, and in establishing procedures for consultation and prioritization of fuels treatments at the state level.

In the realm of the fuels treatment program, it is only through consultation and cooperation that we can incorporate local priorities into decisions, develop the relevant place-based information that helps to inform fuels treatment decisions, and ensure that the perspectives of many different interests are heard.

The Wildland Fire Leadership Council (made up of senior Department of Agriculture and Interior officials and representatives from the National Governors Association, Intertribal Timber Council, the National Association of Counties, the National Association of State Foresters, and the Federal Emergency Management Administration) reviews fuels treatment programs to assure they advance risk reduction and resource protection goals laid out in the *10-Year Comprehensive Strategy*. In addition, Federal agencies have working agreements with the National Association of Conservation Districts and the International Association of Fire Chiefs.

Using Biomass

Without expanding the ability of the private sector to remove biomass from public lands, we cannot address the excessive fuels problem in a timely and efficient way. We cannot solve the fire problem by relying exclusively on Federally funded prescribed burns, for both economic and environmental reasons. Nor can we adequately reduce hazardous fuels simply through other direct Federal actions, because Federal dollars are limited and responsibilities are shared by Federal, State, Tribal, local, and private land managers alike.

Partnering through thinning projects and stewardship contracts with the private sector, non-profit groups, Tribes, and other organizations helps us achieve risk reduction at lower costs to taxpayers and increased benefit to communities.

Woody biomass includes the trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment, that are the by-products of management, including restoration and hazardous fuel reduction treatments. Mechanically removing it for use by people can be economically and environmentally prudent and, in many cases, thinning is the only viable treatment option. Since the biomass will grow in perpetuity, fostering private-sector investment can enable local communities to contribute to biomass management over the long term.

Innovative partnerships are emerging. In Oregon, the Confederated Tribes of Warm Springs are working with the Bureau of Land Management and Forest Service to provide biomass for the Tribes' expanding power generation facility. Other partnerships in Oregon are exploring biomass fueled power plants. Similar work is underway in Alaska, northern California, Idaho, Colorado, Arizona and New Mexico, all involving biomass from fuels treatments.

New contracting procedures and measures to track how much biomass managers are offering to the private sector will help us achieve better commercial of the hazardous fuels removed from public land.

Accountability

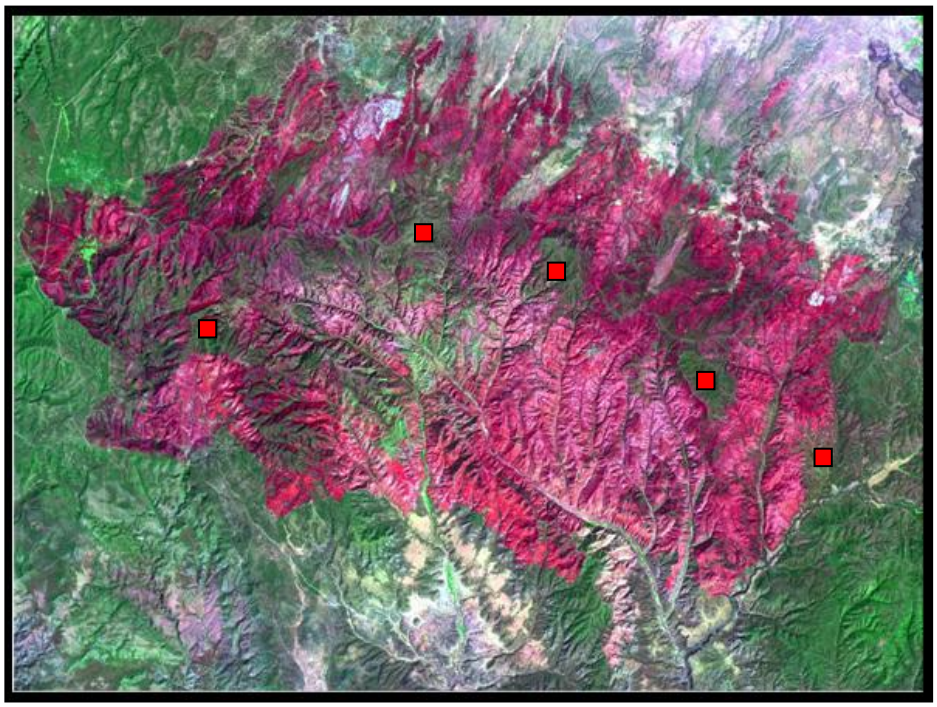
The goals identified in the *10-Year Comprehensive Strategy* are interrelated and overlap somewhat. The actions within the goals, however, are clearly defined and discrete. The *Implementation Plan for the 10-Year Strategy* (10-Year Plan) further defines the goals by establishing end and intermediate outcomes, assigning specific task responsibilities, priorities, and completion due dates. Accountability is addressed through specific performance measures and monitoring actions outlined in the 10-Year Plan.

The goals, outcomes, and performance measures for wildland fire management set forth in the 10-Year Plan have been integrated with the Department and agency strategic plan goals developed under the requirements of the Government Performance and Results Act (GPRA). The performance measures listed under the 10-Year Plan goals, *Reduce Hazardous Fuels* and *Restore Fire-Adapted*

Ecosystems, are positioned under the DOI GPRA Goals for annual performance reporting, *Resource Protection* and *Serving Communities*, whereas the Forest Service annual performance plan divides the two 10-Year Plan goals and measures between *Ecosystem Health* and *Effective Public Service*. In addition to measures tied to the 10-Year Plan, measures originating in the Administration's Program Assessment Rating Tool (PART) have been adopted.

In keeping with the dynamic nature of the overall program and best management practices that call for periodic program evaluations and updates, WFLC is reviewing the 10-Year Plan (the principle

Rodeo/Chediski Fire — Fuel Removal Lessened Burn Severity



Areas marked with red squares experienced active management that removed fuels.

Figure 9

Color indicates degree of burn severity:

- Red = severe
- Yellow = mixed severity
- Green = low severity
- Dark green = areas where fire had little or no impact.

Note that areas where fuels had been removed were minimally impacted by the fire.

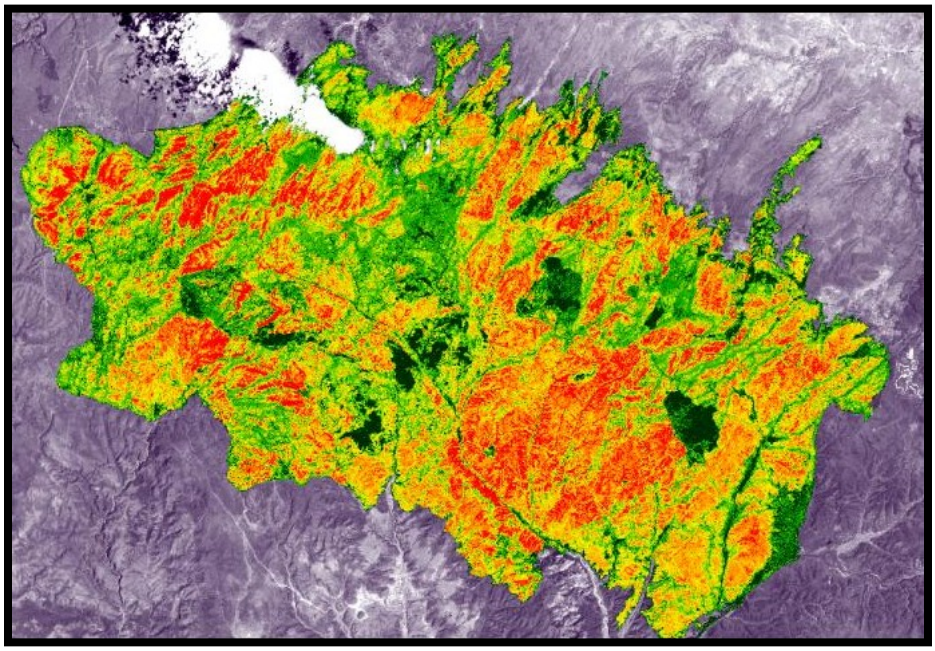


Figure 10

source for program performance measures) in all its facets: goals, implementation tasks, and performance measures. This effort, originally proposed by the Western Governors' Association, will produce revised measures that will build upon lessons learned and new understanding, thereby improving program management and effectiveness (see Appendix C).

WFLC has approved a comprehensive, four-part monitoring program. Using information from a wide variety of sources such Landsat, NFPORS, State governments, and multiparty monitors, the program will allow us to track accomplishments and trends over time and space. A partial listing of tracked items includes: burn severity by year and vegetation type, CWPP completions, homes burned, success in meeting environmental objectives, and progress in collaboration.

The Healthy Forests Report is the performance and accountability reporting system for fuel reduction activities done under the *10-Year Implementation Plan*, as well as HFRA, HFI, and the National Fire Plan. Those authorities provide streamlined collaborative planning highlight stewardship contracting and improved biomass utilization as critical approaches to meet resource and protection objectives. To further leverage capabilities and extend the benefits of vegetation management, the Federal agencies and bureaus must align objectives among all programs that manage vegetation to achieve the greatest possible benefit toward fuel reduction goals.

III Strategy Implementation: Priority Setting and Collaboration

"Treating all fuels across an entire landscape is practically impossible. However, careful placement of fuel reduction areas will decrease the total amount of treatment needed to significantly reduce the risk of catastrophic wildland fire."

Mark A. Finney, Research Forester
Rocky Mountain Research Station, USDA Forest Service

The strategy will result in fewer large, catastrophic fires and less damage from those that do occur than would otherwise be the case, while creating conditions where some fires will be permitted to fulfill appropriate ecological functions. Achieving these outcomes does not necessitate treating all acres or eliminating all risks, but it does require prioritizing work in and outside of the WUI, evaluating results, and adjusting to dynamic circumstances.

The following sections outline that process.

Defining the Wildland Urban Interface

The geographic scope of the WUI depends on local landscape factors and the judgment of local citizenry. Congress addressed the definition of the WUI in HFRA. In preparing their HFRA-directed CWPPs, communities were free to define the WUI as it suited their local circumstances. Congress provided a default definition based on the distance from the community or nearby fire-influencing landscape features but left the final decision in local hands. Thus, HFRA established a *national procedure* for determining the extent of the WUI.

The Western Governors' Association, National Association of State Foresters, National Association of Counties, Communities Committee, and the Society of American Foresters prepared guidelines for preparing a CWPP.

State and local governments prepare CWPPs in consultation with Federal agencies and others. CWPPs identify and prioritize areas for fuels treatments and suggest how communities and homeowners can reduce fire risks.

The *10-Year Comprehensive Strategy* gives the States (through the National Association of State Foresters) the lead in developing a definition of communities at risk and a process for prioritizing them. The States completed the task in June 2003 and presented their work to the Wildland Fire Leadership Council (WFLC), which accepted their proposal, with minor revisions (Appendix A).

The States have adopted the definition of the WUI published in the *Federal Register* on January 4, 2001. This definition recognizes three geographically distinct circumstances—interface community, intermix community, and occluded community—that qualify as a WUI:

1. *Interface community* - "There is a clear line of demarcation between residential, business, and public structures and wildland fuels."
2. *Intermix community* - "There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area. Development density in the intermix ranges from structures very close together to one structure per 40 acres."
3. *Occluded community* - "...within a city, where structures abut an island of wildland fuels (e.g., park or open space). There is a clear line of demarcation between structures and wildland fuels."

The above definitions do not apply to communities with completed Community Wildfire protection

Successful Fuels Treatment in Minnesota

In April of 2004, a wildfire started on the White Earth Reservation in Minnesota and began a run toward the community. The fire defied both air and ground attack and was moving at nearly two miles per hour with 15-20 foot flames lengths until it reached an area where hazardous fuels had been removed. Flame length dropped to one foot and the rate of spread fell by a factor of ten allowing firefighters to successfully attack the fire and thereby saving a number of buildings and lowering overall suppression costs.

Benefits of Collaborative Risk Assessment

Collaboration by the Carson Ranger District of the Humboldt-Toiyabe National Forest, Carson City Fire Department, Nevada Division of Forestry, and the Nevada Fire Safe Council led to identification and treatment of fuels on public and private lands in suburban Carson City, Nevada.

Because of these hazardous fuels treatments, when the Waterfall fire burned into the Lakewood subdivision in July 2004, firefighters were able to burn out behind houses in spite of temperatures and drought conditions that created all-time high fire danger conditions.

Two hundred homes were saved, none were lost.

Plans, and are not applicable for use of HFRA authorities.

In August 2001, the Department of the Interior and the Forest Service published a list of over 9,400 communities near Federal lands that were at risk from wildland fire.

Using guidance from the State Foresters and Community Wildfire Protection Plans, states are prioritizing these and other WUI areas they have identified as needing fuels treatments.

Identifying Areas at Risk

A successful program requires prioritization, yet rank ordering these communities is not realistic. The *10-Year Comprehensive Strategy* assigned the task of developing national standards for identifying and prioritizing communities at risk to WFLC and the states. In June 2003, the states (through the National Association of State Foresters—NASF) proposed, and WFLC accepted, means of prioritizing communities at risk (Appendix A).

The method identifies WUI areas at high, medium, low, or, in some cases, insignificant risk from wildland fire. It establishes a single methodological reference guide for all states to use in categorizing communities. At a minimum, states must classify areas on the basis of four variables: likelihood of fire occurrence, assessment of fuel condition, values being protected, and fire protection capabilities. States may add other variables to meet the needs of their residents. Using this methodology, states are identifying areas of highest risk, which will strongly influence fuels treatment project selection consistent with other resource and regulatory constraints.

Beyond the WUI, and consistent with the *10-Year Comprehensive Strategy* and guidance issued by the Secretary of the Interior and the Chief of the Forest Service, priorities emphasize fire risk mitigation treatments in areas within Fire Condition Classes 2 and 3 within Fire Regimes I, II, and III that will most effectively reduce risks to communities, infrastructure, and resources.

Presently, data are not available at scales that enable us to systematically develop a coherent and uniform national pattern of fuels treatment zones beyond the WUI. LANDFIRE provide data enabling land managers to achieve this capability by the end of 2006 for the 11 western states and for the remainder contiguous states by the end of 2008.

LANDFIRE will provide geospatial data to aid land managers to identify resources, communities at risk, and other applicable factors, and plan fuel reduction treatments at appropriate scales and intensity. It will also assist land managers with integrating the range of other land management decisions that mitigate wildfire risks as well as aid communities with mitigation efforts they can take in fire prone areas. Such efforts will be accomplished in concert with our partners (consistent with the *10-Year Comprehensive Strategy* and the Memorandum of Understanding for the Development of a Collaborative Fuels Treatment Program). WFLC will evaluate these efforts to identify projects that minimize both treatment costs and environmental disturbances.

Setting Priorities

The strategy provides considerations for local prioritization in project planning that will also help to ef-

The Utah Experience

The State of Utah and the five Federal land management agencies established the Utah Fuels and Fire Committee and five area committees to carryout the objectives of the *10-Year Strategy* and its *Implementation Plan*. The area committees include county representatives.

Officials developed a statewide risk assessment. Many county and community level CWPPs are complete and others are underway. CWPPs provide a formal means for local and community interests to accomplish wildland fire protection goals in concert with State and Federal agencies.

The committees use these plans to prioritize fuels treatment projects and community assistance grant proposals statewide.

fectively distribute Federal fuels treatment funds. In prioritizing projects, the States use multiple factors in assessing the proposed project. Is the project:

- Identified in a CWPP?
- Within a category/zone of highest overall risk?
- Associated with a community willing and able to participate in its completion?
- Near land whose owner is willing and able to undertake and maintain a complementary project?

These elements are combined so that, in general, projects in a CWPP and within high-risk areas where communities and land owners actively manage lands to reduce fire risk are given highest priority.

The overall intent is to prioritize project funding to achieve risk reduction to communities, and cultural, historical and natural resources facing significant threats from wildland fire, while balancing the need for some ongoing investments in maintenance of healthy forests and rangelands. DOI and USDA will continue to work with their partners to improve priority-setting to more effectively and more efficiently reduce fire risks to both communities and the environment.

National Fuels Treatment Priorities

In addition to identifying WUI protection as a priority, HFRA speaks to priorities beyond the WUI (Figures 12 and 13). It reinforces priorities previously established by the Administration regarding emphasis on Fire Regimes I, II, and III, and Fire Condition Classes 2 and 3. HFRA also makes specific reference to protection of municipal watersheds, key infrastructure, habitat of T&E species and areas experiencing or threatened by insect and disease outbreaks.

The following areas shall receive priority:

- Areas with conditions that threaten the wildland urban interface.

Black Canyon City, Arizona -- Aqua Fire Success Story

Black Canyon City, is home to 4,000 residents and straddles Interstate 17 north of Phoenix. Heavy brush chokes bottom of the Aqua Fria River which pass through the town. Fire history is dominated by human caused fires originating along the Interstate and led to the creation of a Black Canyon City Wildland-Urban Interface Project.

On the morning of June 3, 2004 a fire started in a residential area and quickly spread into the brush-filled Agua Fria River bottom. Fifteen residences on the south side of the river were threatened and the fire soon moved north toward other structures. Local, State, and Federal firefighters quickly suppressed the fire, holding to 20 acres.

The success of this operation can be credited in part to three years of community prevention and mitigation efforts planned and performed jointly by the Bureau of Land Management and Black Canyon City Volunteer Fire Department. Fuels treatments stopped the fire's westward advance and defensible space created by the project allowed the fire chief to position an engine to abate the flames that threatened structures which sustained no damage.

Fire Regime	Fire Return Internal and Expected Severity	Example of Vegetation Type	% of FS Acres Proposed in 2005 by Fire Regime	% of DOI Acres Proposed in 2005 by Fire Regime
I	0-35 yrs, Low Severity	Dry coniferous forest, longleaf pine	73%	24%
II	0-35 yrs, Stand Replacement*	Rangeland, shrub and grass communities	13%	56%
III	35-100+ yrs, Mixed Severity	Mixed conifer forests, Appalachian oak-hickory	11%	14%
IV	35-100+ yrs, Stand Replacement	Lodgepole pine, Great Basin sagebrush, S. California chaparral	2%	4%
V	200+ yrs, Stand Replacement	Vegetation too high, too dry, or too wet to burn under most scenarios	0%	1%

Table 1 Distribution of planned fuels treatments in 2005 by Fire Regime

- Areas in Fire Regimes I, II, and III, and Fire Condition Classes 2 and 3. However, treating Condition Class 1 lands may receive equal priority in some locations such as the Southeast where existing conditions can deteriorate quickly. (Table 1).
- Mechanical treatments will be emphasized to promote byproduct utilization, infrastructure development and maintenance where byproducts can be utilized, where on-site conditions are appropriate, and where land-use policies do not conflict.
- Prescribed burning will be used when weather and resource conditions permit, where mechanical treatments are not appropriate, and as a maintenance treatment following mechanical treatment.
- Stewardship contracts and other forms of contracting will be emphasized to leverage Federal dollars, take advantage of private-sector innovation, and help achieve greater efficiencies.
- Projects consistent with overall risk reduction goals that result from partnerships and other collaborative efforts with communities will receive preference. This includes efforts such as cost sharing, other in-kind project support, direct community participation (project planning and implementation), the adoption of formal agreements, and the completion of CWPPs.

Local Priority Setting

Within the context of the national priorities described above, agency managers from Federal, State, and local governments, Tribal leaders, and other community participants will establish local priorities using a collaborative decision making process. As with national fuels treatment priorities, collaborators will select local projects based on their contributions to mitigating wildfire risks to communities and resources.

Local priority setting will be consistent with the guidance proposed by the states in June 2003 and accepted by the Wildland Fire Leadership Council as well as procedures established pursuant to the passage of HFRA and will consider:

- Project consistency with national fuels treatment priorities;
- Project consistency with Federal agency land use and fire management plans;
- Identification of the common values to be protected, including community assets: key infrastructure; important natural resources, such as municipal watersheds, crucial wildlife habitat; and historical and cultural resources;
- Evaluation of the risk of wildland fire to the common values that need protection;
- Benefits that extend beyond the area treated (using strategically designed treatment patterns that provide hazard mitigation and other benefits over a much larger area than just the acres actually treated);
- Projects that span multiple ownerships with a logical geographic and temporal sequence of treatments to effectively achieve overall risk reduction;
- Opportunities to offset costs through increased utilization of small diameter woody material and biomass; and
- An important consideration in prioritizing WUI projects for Federal funding is the extent of community participation in, and commitment to, the effort to reduce fire risk to people and property. Evidence of such efforts includes:

  Completion of a CWPP
  - Participation in a cost-sharing agreement between Federal and non-Federal partners; and
  - Completion of state or locally funded fuels treatments on State and private lands.

The agencies will collect, analyze, and periodically report data on individual projects to determine the extent to which these considerations are being used in the project selection process.

In general, the more of these criteria a project meets, the higher its priority for funding.

Identifying and prioritizing fuels treatment projects is a complex and imperfect process. In exercising management discretion, the agencies may need to make exceptions to the requirements listed here.

Figures 11 and 12 on the following pages illustrate the treatment selection process.

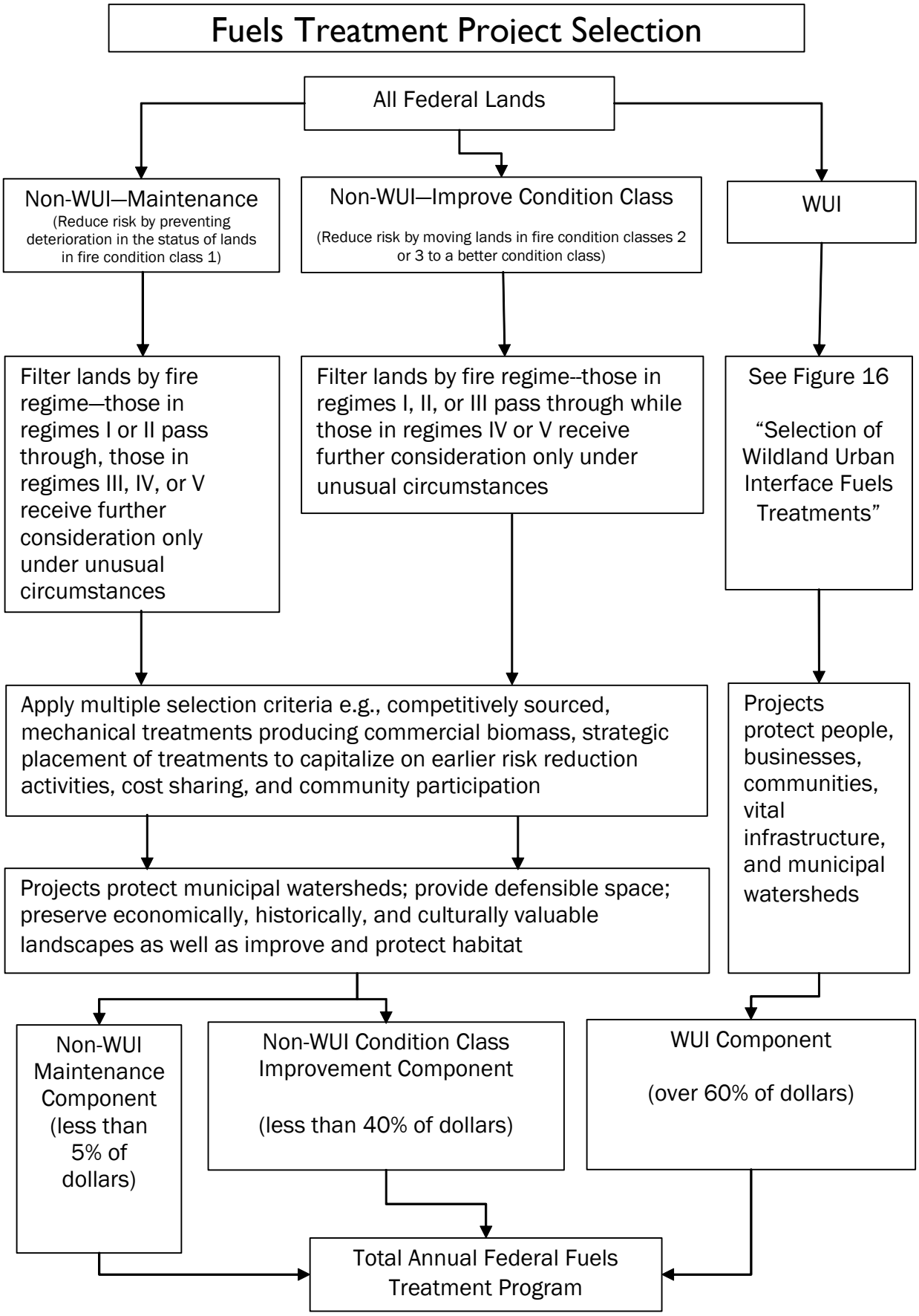

Fuels Treatment Project Selection
All Federal Lands
Non-WUI—Maintenance
(Reduce risk by preventing deterioration in the status of lands in fire condition class 1)
Non-WUI—Improve Condition Class
(Reduce risk by moving lands in fire condition classes 2 or 3 to a better condition class)
WUI
Filter lands by fire regime—those in regimes I or II pass through, those in regimes III, IV, or V receive further consideration only under unusual circumstances
Filter lands by fire regime--those in regimes I, II, or III pass through while those in regimes IV or V receive further consideration only under unusual circumstances
See Figure 16
"Selection of Wildland Urban Interface Fuels Treatments"
Apply multiple selection criteria e.g., competitively sourced, mechanical treatments producing commercial biomass, strategic placement of treatments to capitalize on earlier risk reduction activities, cost sharing, and community participation
Projects protect people, businesses, communities, vital infrastructure, and municipal watersheds
Projects protect municipal watersheds; provide defensible space; preserve economically, historically, and culturally valuable landscapes as well as improve and protect habitat
Non-WUI Maintenance Component (less than 5% of dollars)
Non-WUI Condition Class Improvement Component
(less than 40% of dollars)
WUI Component
(over 60% of dollars)
Total Annual Federal Fuels Treatment Program

Figure 11

Selection of Wildland Urban Interface Fuels Treatments

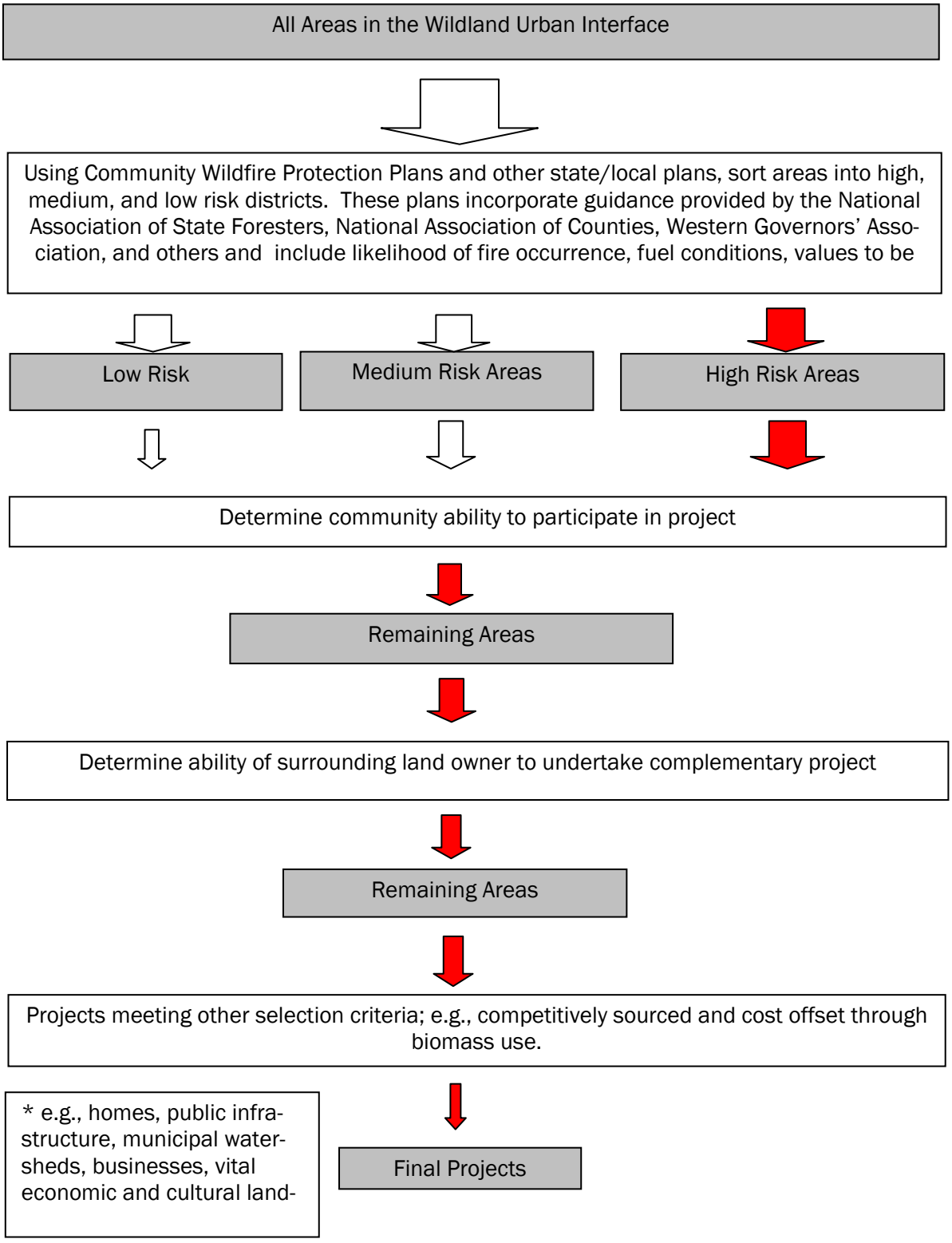


Figure 12

Wildland Fire Use

A key component of the overall strategy is the use of wildland fire, those naturally caused fires that are allowed to burn under very specific and clearly defined circumstances.

The agencies recognize the need to use of wildland fire to improve land conditions, particularly in remote areas. Under the right conditions, such fires can effectively accomplish fuel reduction or maintenance objectives as well as contribute to ecological benefits some fires may provide. The key is making sure that appropriate planning is in place so that risks are minimized.

Accordingly, the Departments have recently completed or updated land use and fire management plans that, combined with careful placement of fuels treatments, will enable an increase in wildland fire use over what it would have otherwise been.

Fire Program Analysis

The fire community has not limited its efforts to upgrade its effectiveness via science and research to fuels treatments alone. Just as emerging knowledge and information will allow us to better pattern fuels treatments on the landscape to achieve program goals, so will they allow us to better position fire-fighting resources to more effectively suppress unwanted fires.

The Fire Program Analysis (FPA) initiative will provide all Federal land managing agencies engaged in wildland fire-fighting with an integrated tool to evaluate how to best manage fire-fighting resources under varying budget assumptions. It brings together consideration of values to be protected, available resources, likelihood of occurrence, and other factors to suggest how to position fire-fighting resources throughout some 147 Fire Planning Units across the nation.

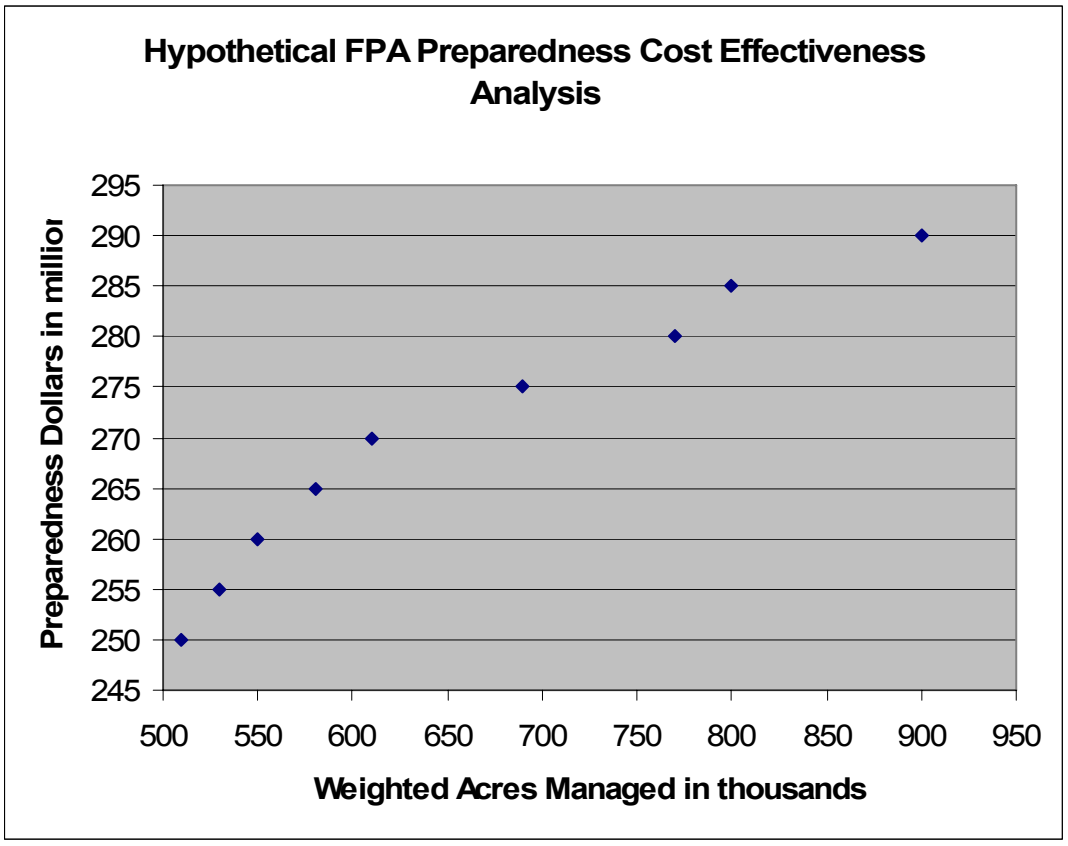


Figure 13

IV Strategy Implementation: Accountability by Evaluating Performance

Measuring Effectiveness

A complete understanding of program success includes effectiveness and efficiency. It requires an objective evaluation of success in reducing the risk of catastrophic wildland fire to people and natural resources (effectiveness), and whether projects are achieving the optimal risk reduction for the resources invested (efficiency).

As shown below, the *Implementation Plan for the 10-Year Comprehensive Strategy* spells out specific goals, tasks, and performance measures that allow us to assess the effectiveness and efficiency of the fuels reduction program.

In addition to existing measures, the agencies and their partners are considering new ways to determine program effectiveness and efficiency. As the program matures, the agencies gain greater knowledge and understanding that will lead to more refined and useful ways to track progress.

GOAL 2	REDUCE HAZARDOUS FUELS
Implementation Outcome	***Hazardous fuels are treated, using appropriate tools, to reduce the risk of unplanned and unwanted wildland fire to communities and to the environment.***
Performance Measures	a) Number of acres treated that are 1) in the Wildland Urban Interface or 2) in condition classes 2 or 3 in fire regimes 1, 2, or 3 outside the wildland urban interface, and are identified as high priority through collaboration consistent with the Implementation Plan, in total, and as a percent of all acres treated. b) Percent of prescribed fires conducted consistent with all Federal, State, Tribal and local smoke management requirements.
Efficiency Measure	c) Number of acres treated per million dollars gross investment in Performance Measures "a-1" and "a-2" (above) respectively

GOAL 3	RESTORE FIRE-ADAPTED ECOSYSTEMS
Implementation Outcome	***Fire-adapted ecosystems are restored, rehabilitated and maintained, using appropriate tools, in a manner that will provide sustainable environmental, social, and economic benefits.***
Performance Measures	a) Number of acres (both WUI and non-WUI) in fire regimes 1, 2, or 3 moved to a better condition class, that were identified as high priority through collaboration consistent with the Implementation Plan, in total, and as a percent of total acres treated. b) Percent of all DOI and USDA acres in good condition (defined as acres in condition class 1).
Efficiency Measure	c) Percent of areas degraded by wildland fire with post-fire treatments underway, completed, and monitored. d) Number of acres in Performance Measure "a" (above) moved to a better condition class per million dollars of gross investment.

Expanding Measures of Efficiency

This strategy incorporates effectiveness and efficiency measures flowing from the *Implementation Plan* for the *10-Year Comprehensive Strategy*. In addition, the Department of the Interior bureaus are implementing new programs to establish best practices benchmarks that will allow managers to evaluate the cost of fuels treatments under a variety of local and regional conditions. The measures will permit comparing the efficiency of fuels treatments accomplished under both similar and dissimilar circumstances.

Department of the Interior bureaus and the Forest Service have prepared new accounting procedures to enhance their ability to track costs. The agencies are developing automated tools to systematically and consistently track and evaluate cost and performance from actual expenditures. Comparisons of estimated and actual costs will enable managers and others at all levels—departmental, bureau, regional, and local—to identify successes and needed improvements in the fuels treatment, rehabilitation, and other areas of the wildland fire management program. The agencies have also jointly standardized fire incident cost coding protocols to capture financial obligations for multi-jurisdictional fires.

The Department of the Interior and the Forest Service have taken steps to improve the delivery of the fuels treatment program. To this end, senior officials have taken several steps. In January 2003, the Secretary of the Interior and the Chief of the Forest Service provided additional guidance on fuels treatment priorities to the bureaus within the Department of the Interior and the Forest Service. Also in January 2003, senior officials of the Departments of Agriculture and Interior, along with agency heads and representatives of State and local government, signed a memorandum of understanding regarding the selection and prioritization of fuels treatment projects.

Critical to the success of a cohesive fuels treatment strategy is the ability to jointly plan and track fuels treatment projects. The Department of the Interior and the Forest Service have developed the National Fire Plan Operations and Reporting System (NFPORS) to meet this need. The NFPORS is an automated tool that enables field offices to enter project specific information about a fuels treatment project, to track progress against milestones and report accomplishments. This real-time information may be aggregated to track progress toward annual fuels treatment goals for an individual agency, region, State or field office. The agencies are relying upon a field based users group to evaluate utility of the system and provide recommendations for modifications.

The Department of the Interior and the Forest Service rely on performance data to gauge programmatic success. Using the direction provided by the *Implementation Plan* for the *10-Year Comprehensive Strategy*, the Federal agencies, in concert with representatives from State and county government, developed uniform performance measures, inputs and data standards for the wildland fire management program. Included as a part of the overall program are specific measures and data standards for tracking and evaluating the success of a comprehensive fuels treatment program. These standard measures include a blend of relevant existing and new measures that are necessary to meet the hazard fuel reduction and ecosystem restoration goals of the *Implementation Plan*.

V Conclusion

Constant flux characterizes landscapes, human settlement, and land use patterns. Human settlement and land use patterns change through time and space. Societal expectations for the land likewise vary over time and from place to place. Many players and factors influence public policy. Resource constraints and competing goals indicate the importance of choices and priorities. The fuels issue lies at the confluence of these points. This strategy seeks to account for each. It is a work in progress.

The strategy establishes a framework for priority-setting, accountability and partnerships to ensure effective, efficient, and focused investments in fuels treatments.

The strategy efficiently and effectively focuses Federal land management efforts in collaboration with those of State, Tribal, and local governments to reduce risks that uncharacteristically severe wildland fire pose to people, communities, and natural resources.

The Point of the Strategy

From this to this →

From this to this →

Figure 14

APPENDIX A – NATIONAL ASSOCIATION OF STATE FORESTERS PRIORITY FIELD GUIDANCE

FIELD GUIDANCE
Identifying and Prioritizing Communities at Risk
Prepared by: National Association of State Foresters
June 27, 2003

Purpose: To provide national, uniform guidance for implementing the provisions of the "Collaborative Fuels Treatment" MOU, and to satisfy the requirements of Task e, Goal 4 of the Implementation Plan for the 10-Year Comprehensive Strategy.

Intent: The intent is to establish broad, nationally compatible standards for identifying and prioritizing communities at risk, while allowing for maximum flexibility at the state and regional level. Three basic premises are:

- Include all lands and all ownerships.
- Use a collaborative process that is consistent with the complexity of land ownership patterns, resource management issues, and the number of interested stakeholders.
- Set priorities by evaluating projects, not by ranking communities.

References:

1. *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment. 10-Year Comprehensive Strategy Implementation Plan.* May 2002. (Goal 4 Task e: "Develop nationally comparable definitions for identifying at-risk wildland urban interface communities and a process for prioritizing communities within state and tribal jurisdiction.") (Available at: http://www.fireplan.gov/reports).

2. *Memorandum of Understanding for the Development of a Collaborative Fuels Treatment Program.* January 13, 2003. (Available at: http://www.fireplan.gov/reports).

3. *Concept Paper: Communities at Risk.* National Association of State Foresters (NASF), December 2, 2002. (Available at: http://www.stateforesters.org/reports).

4. *Wildland/Urban Interface Fire Hazard Assessment Methodology*. NWCG, undated (circa 1997). (Available through the NWCG Publications Management System (PMS), NIFC Catalog number NFES 1597.)

Definition – Community at Risk: For the purpose of this document, a community is defined as "a group of people living in the same locality and under the same government" (*The American Heritage Dictionary of the English Language*, 1969). A community is considered at risk from wildland fire if it lies within the wildland/urban interface as defined in the Federal Register (*FR Vol. 66, No. 3, Pages 751-754, January 4, 2001).*

Approach:

1. Identify communities at risk (or alternately, landscapes of similar risk) on a state-by-state basis with the involvement of all organizations with wildland fire protection responsibilities (State, local, Tribal, and Federal) along with other interested cooperators, partners, and stakeholders. Alternately, in

some locations this may be more easily done on a geographic basis through the already existing Geographic Area Coordinating Groups.

- Using the 2000 census data (or other suitable means) identify all communities in the state that are in the wildland urban interface and that are at risk from wildland fire, regardless of their proximity to Federal lands. Ideally, the results of this effort would be displayed on a map or series of maps.

- Develop state-specific criteria for sorting communities (or landscapes) into three, broad categories (or zones) of relative risk, using the methodology described in the following section. You also may want to include a fourth category denoting little, or no significant risk.

- Prioritize the categories/zones as high, medium, and low. Alternately, a classification of very high, high, and moderate may be more appropriate depending upon fuel types. Again, you may have a fourth category/zone that you would prioritize as having little, or no significant risk.

- Using the identified criteria, sort communities (or landscapes) into each of the three categories or zones of risk. The product may be map-based with lines or colors depicting the three zones on a map or series of maps. In this case, all communities that fall within the same zone would be classified as having an equivalent degree of relative risk. Alternately, in some states cooperators may choose to use a written document to display how communities have been classified, such as a simple spreadsheet or table. In this case, individual communities would be listed by name under one of the three previously identified categories of risk.

- If there are land ownerships that cross state lines (for example Indian Reservations or single, National Forests), it is important to coordinate the risk assessment process with neighboring state(s) to ensure consistency in classification.

- After completing the assessment process for a specific community, strongly encourage the development of a mitigation plan to reduce the identified risks to the community, particularly for communities in the higher risk categories.

2. Annually, using available mitigation plans or another similar analysis process, Federal agencies, state agencies, and tribes will each examine the lands under its own ownership or jurisdiction and, with the involvement of all interested parties, identify high priority fuels reduction and ecosystem restoration projects which have the potential to reduce the risk to a specific community or communities.

3. Prior to May 1 of each year (beginning in 2004) state, Federal, local, and Tribal partners and interested stakeholders should meet to complete a joint program of work for the upcoming Federal fiscal year. Jointly prioritize projects within each state using the collaborative process defined in the national, interagency MOU "*For the Development of a Collaborative Fuels Treatment Program*". Assign the highest priorities to projects that will provide the greatest benefits either on the landscape or to communities. Attempt to properly sequence treatments on the landscape by working first around and within communities, and then moving further out into the surrounding landscape.

   [Note: In some of the larger states, this process may have to be initiated at the sub-state level first. The resulting lists of prioritized projects would then be reviewed by a state level collaborative group, who would develop the final, joint program of work.]

   - First, focus on the category/zone of highest overall risk but consider projects in all categories/zones. Identify a set of projects that will effectively reduce the level of risk to communities within the category/zone.

   - Second, determining the community's willingness and readiness to actively participate in

each identified project.

- Third, for each potential project, determining the willingness and ability of the owner of the land surrounding the community to undertake, and maintain, a complementary project.

- Last, set priorities by looking for projects that best meet the three criteria above. In other words, assign a higher priority to those projects with the greatest potential to achieve a proper sequencing of treatments. Assign lower priority to projects where either the community or the surrounding landowner is unwilling or unable to actively participate. However, do not overlook opportunities around isolated, rural communities which may be at high risk, but not be organized well enough to effectively advocate on their own behalf.

- Note: One reason for the collaborative priority setting process is the opportunity to identify complementary projects on adjoining ownerships which, if implemented, would provide a greater benefit to communities than if only a single project was implemented. However, nothing in this document is intended to prevent non-public landowners (such as Indian tribes) from implementing any project on their own lands, regardless of overall priority.

4. Annually document accomplishments both quantitatively and qualitatively.

    - Quantitative measures. Document accomplishments in accordance with the performance measures identified under Goal 4 in the *10-Year Comprehensive Strategy Implementation Plan* (page 15). However, the single, most important quantitative reporting element is the number of implemented projects that result in a significant and measurable reduction of risk to the communities and landscapes within the project area. In the longer term, it is important to document situations where a wildfire burned through an implemented project area, and determine how the treatment affected fire behavior.

    - Qualitative measures. Document examples of successfully implemented projects using the guidelines previously distributed by Federal agencies and the NASF for "success stories". These "success stories" will then be placed on both the NASF and the National Fire Plan websites as examples how we collectively are reducing risks to communities.

Methodology:

Although there is no uniform, national hazard or risk assessment process, there are a number of valid assessment processes that may work well in individual states or regions. In developing a risk assessment process for communities, use the NWCG publication *"Wildland/Urban Interface Fire Hazard Assessment Methodology"* as a reference guide. At minimum, consider the following factors when assessing the relative degree of exposure each community (landscape) faces. One effective approach is to map the four factors below using adjective ratings (high, medium, and low) and then overlay the maps to determine geographic areas of highest hazard, highest probability of fire occurrence, highest values being protected, and lowest protection capability.

- Fire Occurrence. Using historic fire occurrence records and other factors, assess the anticipated probability of a wildfire ignition in the vicinity of each community (or identified landscape) using an adjective rating system, such as high, medium, and low.

- Hazard. Assess the fuel conditions on the landscape and surrounding the community using a GIS mid-level mapping tool (if available) or other similar process. Again, apply an adjective rating to each specific area.

- Values Protected. Evaluate the human and economic values associated with the community or landscape, such as homes, businesses, community infrastructure (e.g. water systems, utilities, transportation systems, critical care facilities, schools, manufacturing and industrial

sites, etc.) as well as high value commercial timber lands, municipal watersheds, and areas of high historical, cultural, and spiritual significance. As with the other factors, apply an appropriate adjective rating to each community or identified landscape.

- Protection Capabilities. Assess the wildland fire protection capabilities, including the capacity and resources to undertake fire prevention measures, of all agencies or organizations with jurisdiction: Federal, State, Tribal, and local. Again, apply an appropriate adjective rating. Consider using the Insurance Services Organization (ISO) rating for the community as an indicator.

SUMMARY:

Using the process described above, it is possible to assess the level of relative risk that communities in the wildland urban interface face from wildland fire. This can then lead to an efficient process for prioritizing and scheduling effective, fuel reduction projects. However, recognizing that the condition of the vegetation (fuel) on the landscape is dynamic, and that the resilience of communities to wildfire loss varies widely and changes over time, it is not only important and necessary to complete community assessments, but also to periodically complete re-assessments. The frequency of re-assessments, however, will vary considerably across the country depending upon fuel types and climate. We must remember that it is not only important to lower the risk to communities, but once the risk has been reduced, to maintain those communities at a reduced risk.

Further, it is essential that both the assessment process and the prioritization of projects be done collaboratively, with all agencies with fire protection jurisdiction – Federal, State, local, and Tribal – and interested stakeholders, taking an active role.

APPENDIX B – HISTORY

"Fire came to North America in three great waves....there was lightning....the fire brought across the Bering Strait from Asia by Pleistocene immigrants and the fire brought from Europe in more recent centuries."

Stephen Pyne
Historian
Arizona State University

Fire Ecology History

Fire, ignited either by lightning or burning by Native Americans, helped shape nearly all forests, woodlands, shrublands, and grasslands in North America. Fires occurred across these lands at a variety of frequencies and severity, including:

- 1 to 2 year fire cycles in the southeastern longleaf pine forests (low severity).
- 5 to 15 year fire cycles in interior west ponderosa pine forests (low severity).
- 30 to 80-year fire cycles in the southwest Oregon mixed conifer forests (moderate severity).
- 20 to 50 and 35 to 150-year fire cycles in two species of sagebrush in the Great Basin (moderate severity).
- 60 to 200-year fire cycles in Alaska's boreal forests (high severity).
- 200 to 500-year fire cycles inside the coastal rain forests of the Pacific Northwest (high severity).

Plant species within these fire regimes adapted to fire as necessary by developing survival or recovery mechanisms such as: thick tree bark to survive fires; an ability to sprout from roots after fire; seeds that require heat to germinate and an ability to flourish in recently burned landscapes.

Fire Regime

A generalized description of fire's interaction with a vegetation community in a given area, characterized by fire frequency, seasonality, intensity, duration, and scale (patch size), as well as regularity or variability (see Appendix C)

For thousands of years, the magnitude of burning that occurred in what is now the coterminous United States (excluding Alaska and Hawaii) was much greater than today. On Federal lands, fires historically burned more than 25 million acres annually. Over the last ten years less than one-third of that total has, on average, burned annually through the use of prescribed fire and wildfires combined.

This reduction in wildland fire has resulted in a tremendous increase in combustible vegetation and litter. Consequences of this fuel accumulation include adverse changes in vegetation composition, structure, and wildlife habitat. As recent wildland fire seasons have illustrated, these changes have prompted an increase in unwanted wildland fires that burn more intensely and severely.

Land Use History

Euro-American Settlement and Fire Exclusion

Today's wildland fire situation has roots dating to the 1800s in many places. Upon entering new lands, Euro-Americans frequently encountered landscapes whose plant communities had been shaped to a greater or lesser extent by previous Native American burning as Tribes manipulated vegetation to meet their needs using the most effective tool at hand—fire. The new settlers, however, had different requirements and a different tool kit. They made much greater use of timber resources for construction and as fuel. They cleared land for agriculture and introduced grazing. They built permanent settlements of combustible material prompting rudimentary fire suppression efforts that would eventually become highly effective and sophisticated as fire was seen less as a land management tool and more as a threat to valued landscape attributes. In short, Euro-Americans reduced fire's role as a factor in shaping vegetative communities by withdrawing human-induced fire and by suppressing naturally ignited wildfire.

With less fire, forests and shrublands tended to age and become more prone to insect and disease outbreaks; fuel accumulations reached new levels (especially in the West where decomposition rates are extremely slow) with a concomitant increase in fire severity and intensity.

Artwork Jim Dawson, © National Geographic Society, 1996

TOP PANEL depicts a ponderosa pine stand that has experienced frequent, low-severity fire. Stand structure, species composition, and fire behavior are characteristic of ponderosa pine plant communities prior to Euro-American settlement. (No disruption to the historical fire regime.)

BOTTOM PANEL portrays a ponderosa pine stand in which fire has been excluded, thereby disrupting the historical fire regime. Stand structure, species composition, and fire behavior have changed dramatically.

Figure 15

Severe Wildland Fires Increase Non-Native Species

In some forests and woodlands, logging, grazing, and uncharacteristically severe fires have also contributed to increases in non-native species of invasive plants, insects, and pathogens. This invasion of non-native plants has negatively affected ecosystems in various ways, including native species displacement and endangerment, reduced site productivity, and degraded water quality.

Non-native species have also greatly increased fuel loadings in some areas, resulting—once again—in more frequent and more severe wildland fires.

INVASIVE SPECIES – Tamarisk (in inset and background) is one of many invasive species that can cause unwanted wildland fire to increase in severity—threatening and damaging both communities and natural resources.

Figure 16

Throughout the conterminous United States, non-native invasions have significantly altered fire regimes. (Alaska's fire regimes, on the other hand, have not been significantly altered by these influences.) Specifically, the following non-native invasions have resulted in more frequent and more damaging unwanted wildland fires:

- Melaleuca in the southeast United States;
- Phragmites along the Atlantic Coast;
- Cheatgrass in the Great Basin;
- Tamarisk in riparian areas of the southwest United States; and
- Non-native grasses in Hawaii.

In addition, pathogens such as American chestnut blight and white pine blister rust have changed many eastern forests by eliminating these large, dominant, fire-resistant trees. This, in turn, has increased fire hazard in areas not traditionally considered at high-risk from wildland fire. Similarly, emerging forest health maladies like "sudden oak decline" are also increasing fire hazard in known

Rangelands and Fire

Most rangelands have experienced significant changes in fire regimes during the past 150 years. Prior to fire suppression efforts, wildland fire had maintained grasslands by rejuvenating decadent grasses and killing young woody species that might have seeded between fire occurrences. Maintaining grasslands was often a major objective of Native American burning as grasslands and herbaceous plants were the favored habitats of game species that provided important food sources.

Fire suppression allowed an invasion of woody species onto these grasslands, causing reductions in herbaceous cover and increased density of woodlands and shrublands. Many rangeland sites lost much of their herbaceous ground cover. On some sites, this loss of ground cover resulted in increased wind and water erosion. Erosion further reduced herbaceous cover.

When fire eventually burns these sites, it is generally more severe than in historic rangeland environments due to hotter fires burning for longer periods of time caused by larger amounts of fuel.

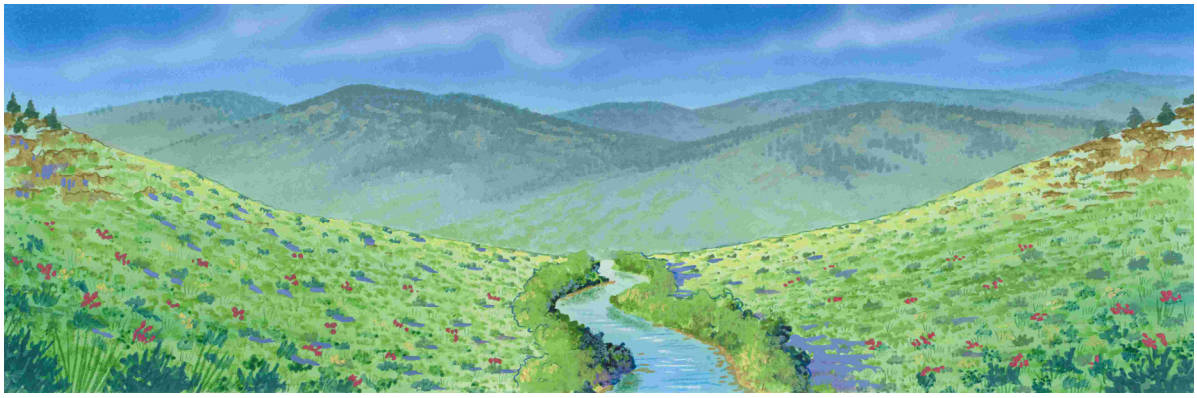
"The Country's 90 year-old policy of fire suppression has played a significant role in transforming our...ecosystems to their current condition with their heavy fuel loads. With the severity of fires that we are seeing, and the number of threatened and endangered species that we are trying to save, it's clear that things are out of balance."

Governor John Kitzhaber, Oregon
Western Governor's Association
Position Paper 1-01, December 2000

Non-Native Species and Fire

Many rangelands became havens for herbaceous non-native species. Invasions by non-native species can affect rangeland fire regimes much differently than woody species invasions. Many non-native annual plant species dry out earlier than native perennials. This prompts a longer annual flammable period. The longer flammable season—coupled with denser ground cover typical of these non-native species—leads to more frequent fires than would otherwise be the case. often each time a fire occurs, additional opportunities for non-native species establishment ensue. The result: a cycle of unwanted vegetation and habitat change and costly, unwanted wildland fires.

Fire's Role in Maintaining Desirable Rangeland Conditions



DESIRABLE RANGELAND CONDITIONS – Native species dominate the plant community which contains an abundant diversity of grasses, forbs, and shrubs. Juniper trees occupy rocky outcrops on the upland. The riparian ecosystem along the stream is dominated by willows and herbaceous riparian species. Fire, at a moderate frequency, helps maintain these conditions. *Figure 17*

UNDESIRABLE RANGELAND CONDITIONS – Due to disruptions in its fire regime, this rangeland plant community lost grasses, forbs, and shrubs. Fire exclusion allowed juniper trees to expand downslope. As juniper increases in density and extent, herbaceous cover decreases. This means less surface fuel less frequent fires allowing further juniper expansion. Reduction in herbaceous cover also means increased overland flow during high rainfall events and increased channel down-cutting. Down-cutting and grazing has also caused the disappearance of willow from the riparian area. *Figure 18*

UNDESIRABLE RANGELAND CONDITIONS – This plant community contains very little species diversity. Replacement of native species by exotic cheatgrass has fueled an increased frequency of wildland fire that, in turn, has reduced shrubs, small trees, and exacerbated a decline in native plants. Reduction in native perennial forbs, shrubs, and small trees contribute to overland flow of water during high rainfall events and increased down-cutting in stream channels. Down-cutting and grazing has also caused the disappearance of willow from the riparian area.
Figure 19

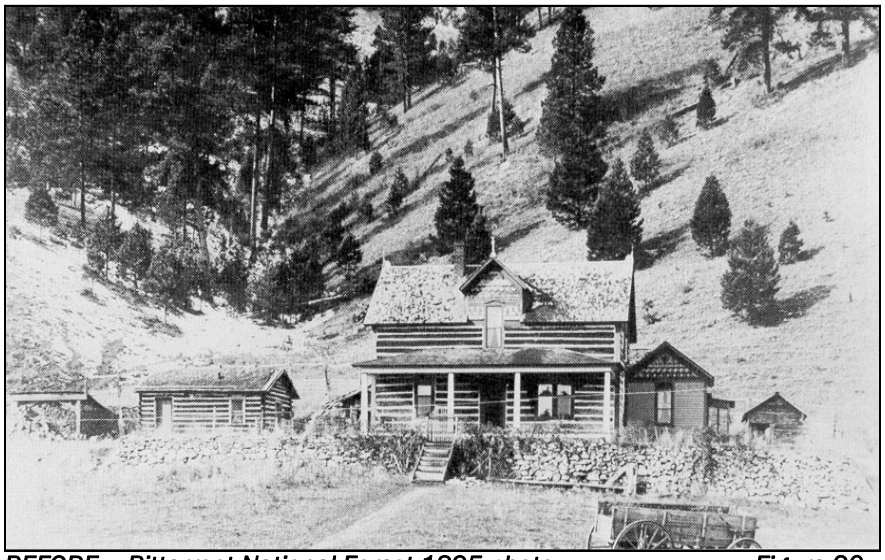
Forests and Fire

Fire exclusion and historical logging practices altered forest structure, species composition, and associated fire regimes. Fire suppression efforts began influencing forest structure and composition more than 100 years ago. In the absence of fire, understory trees became much more dense. In many areas, understories shifted to species that were more shade-tolerant and less resistant to fire and drought cycles. As these forests aged, resistance further declined and they became increasingly susceptible to insect and disease outbreaks. As a result, wildland fires in these forests burned more severely than those of the past and became more difficult to control.

Commodity-driven logging has also been associated with increased fire hazard. For instance, in the Lake States during the late 19th Century, logging removed the large, fire-resistant trees and left behind only small diameter trees and slash. These hazardous fuel conditions led to wildland fires that, in some cases, destroyed entire communities and killed hundreds of people. As these adverse impacts were recognized and understood, timber-harvesting practices were improved and became less detrimental. These changes, spreading from New England to the Great Lakes and then to the West, resulted from the efforts of the states through the establishment of interstate fire compacts, fire councils, and forest management laws.

Management of forests on Federal lands consisted primarily of fire protection until the end of World War II, when the demand for lumber escalated dramatically. Timber harvesting on Federal lands greatly increased from the 1950s through the 1980s. Within some forests during these decades, many of the larger, fire-resistant trees were harvested. Where forests containing larger and more widely spaced trees large once stood, natural reseeding coupled with well-intentioned planting and fire suppression actions resulted in dense stands of more fire prone smaller trees and brush.

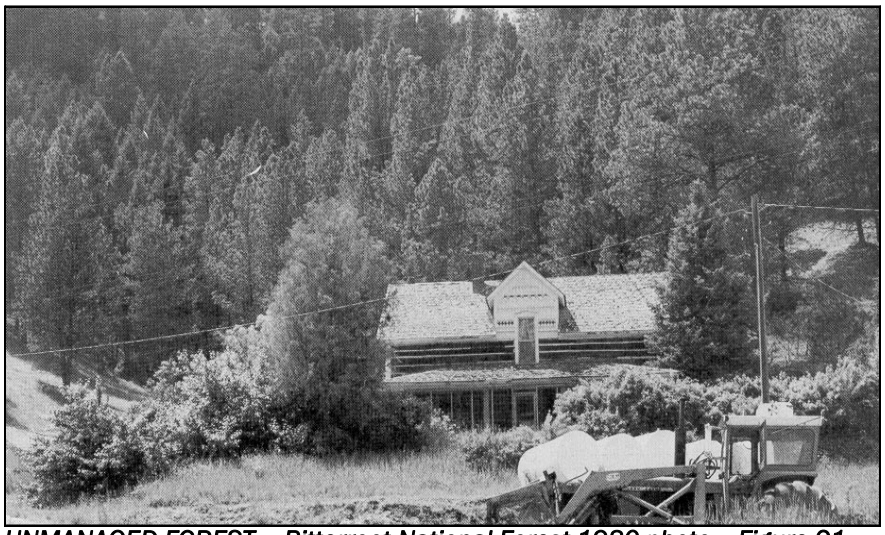
These past policies rested on the best available science and demands placed on our forests by societal expectations whether the management issue was fire suppression or resource use. Scientific understanding changes, however, as do the views taken by the public regarding our forests and rangelands. The current state of knowledge acknowledges the need to actively manage the public lands to achieve landscapes whose combustibility will allow us to more effectively fight those fires we deem unwanted while creating conditions that will enable us to allow those fires that are within a land management prescription to burn.



BEFORE – Bitterroot National Forest 1895 photo. *Figure 20*

Before

The 1895 photo serves as the baseline reference for forest stand conditions that evolved from regularly occurring, low-intensity, surface burning. The forest was open and dominated by fire-tolerant, fire-adapted ponderosa pine.



UNMANAGED FOREST – Bitterroot National Forest 1980 photo. *Figure 21*

Unmanaged Forest

The 1980 photo (from same place) shows how the forest has changed dramatically since 1895. Over this 85-year period, small trees have established into dense thickets. These fire-intolerant tree species now crowd the forest. During drought periods the overabundance of vegetation stresses the site, pre-disposing it to insect infestations, disease outbreaks, and severe unwanted wildland fire.

AFTER – Bitterroot National Forest 2001 photo. *Figure 22*

After

The 2000 fire season brought catastrophic changes to much of the Bitterroot National Forest. In this 2001 photo (again, from same place) no "forest" and only a few trees survived the severe fire. The house had been moved prior to the firestorm. However, this is seldom an option for residents.

Increasing Fire Risk in Wildland Urban Interface Areas

Urban and suburban community expansion into rural areas placed valuable human improvements across a landscape that now burns much more severely than historically. Today, destructive fires in the wildland urban interface—the ever-increasing areas where people have interspersed with wild lands—occur in fire-prone areas across the nation.

During the 1970s and, 1980s, the interior West's population increased more rapidly than the country at large. This demographic trend quickened in the 1990s. As human populations continue to grow and demographics shift—concentrating more people inside or adjacent to wildlands throughout the United States—even more private property will be at risk to unwanted wildland fires. During dry years or under adverse weather conditions—because they occur in areas with highly flammable fuels or excessive fuel accumulations—many wildland urban interface fires exceed firefighting capabilities.

Wildland Urban Interface Lands Evolved with Fire

The vegetation in many of these interface areas—where wildland fire now poses the greatest threat to human lives and values—evolved with fire. Thus, in the absence of fire, treatments are necessary to reduce fuel accumulation. Continued fire exclusion will allow wildland fire hazards to increase and will contribute to unwanted vegetation changes.

While not all natural fires can be allowed to burn freely, prescribed burning, wildland fire use, and especially, the mechanical removal of hazardous fuels can be used to reduce threats to communities. Some of these treatments may have a collateral benefit of restoring and maintaining desired vegetative conditions. Treatments on Federal lands alone, however, will not solve the problem. They must also occur on adjacent State, Tribal, local, and private lands.

While Federal agencies and their partners will never completely remove the risk of unwanted wildland fire, the funding provided by Congress—beginning with the 2001 budget—coupled with the actions outlined in this s
trategy, the *Implementation Plan for the 10-Year Comprehensive Strategy*, and the Healthy Forests Initiative, and the Healthy Forests Restoration Act, can begin to arrest the trend of increasing risk from unwanted wildland fire in high-risk areas.

Suppression Costs Increase near Communities

Fires become more costly when homes are involved. Throughout much of the interior West, short ifire return interval vegetation communities are typically located in valley bottoms where homes and human development are most concentrated. Just as constructing homes in floodplains exposes homeowners to risk of floods, development in these plant assembleges poses a tangible wildland fire risk to communities.

The 2000 wildland fire season demonstrated the increased costs of firefighting near people and homes. The Skalkaho Fire on the Bitterroot National Forest covered 64,000 acres of forest interspersed with homes. It employed 755 firefighting personnel at a cost of $7.2 million. Meanwhile, on the same National Forest within the Selway-Bitterroot Wilderness Area, a fire that burned the same approximate acreage (63,000 acres) required only 25 firefighters at a cost of approximately

Certainly, the wildland urban interface dilemma represents a crucial land management challenge to protect lives, private property, and natural and historic resources from unwanted wildland fire. Efforts to reduce hazardous fuel on Federal lands must be coupled with efforts to educate and assist private landowners to take preventive action in their own communities.

Creating defensible perimeters around homes, improving building codes and zoning regulations, and employing fire resistant landscaping will help reduce wildland fire risk to communities. These and similar actions can help prevent wildland fires from burning homes and reduce insurance premiums and suppression costs.

To attain these fire-safe attributes, public outreach and education are critical.

Fire Risk to Communities

Not all structures and communities in urban-wildland interface areas are at significant risk from wildland fire. A combination of factors determines the relative risk to a community, including:

- The composition and density of vegetative fuel within and around the community;
- Fire occurrence;
- Occurrence of extreme weather conditions;
- Type of construction material and design of structures;
- Density of structures;
- Topography;
- Fire protection capability; and
- Community infrastructure including road access and water sources. (Determining community risk to unwanted wildland fire should consider local variations to these factors as well as community-specific fire protection measures, planning codes, and zoning regulations.)

APPENDIX C – FIRE REGIMES AND FIRE CONDITION CLASSES

Fire Regime Groups

In April 2001, a national course-scale assessment (*Course-Scale Spatial Data for Wildland Fire and Fuels Management: Version 2000,* Schmidt, et al., 2002) examined land condition in the conterminous United States with respect to the degree of fire regime departure from historical fire cycles due to fire exclusion and other influences previously discussed in Appendix B (selective timber harvesting, grazing, insects and disease, the introduction and establishment of non-native plants). The study's objective was to "provide managers with national-level data on current conditions of vegetation and fuels…"

It characterizes the landscape by five "Fire Regime Groups" and three "Fire Condition Classes." In this analysis, wildfire risk conditions are identified by the Fire Regime Groups and are measured by the Fire Condition Classes. Specifically, the historical frequency and severity of fire within an ecosystem are the identified Fire Regime, and Fire Condition Class identifies the departure of current conditions from the historical reference condition.

LANDFIRE will begin producing more detailed maps and data tied to Fire Regime Condition classes beginning in the summer of 2005.

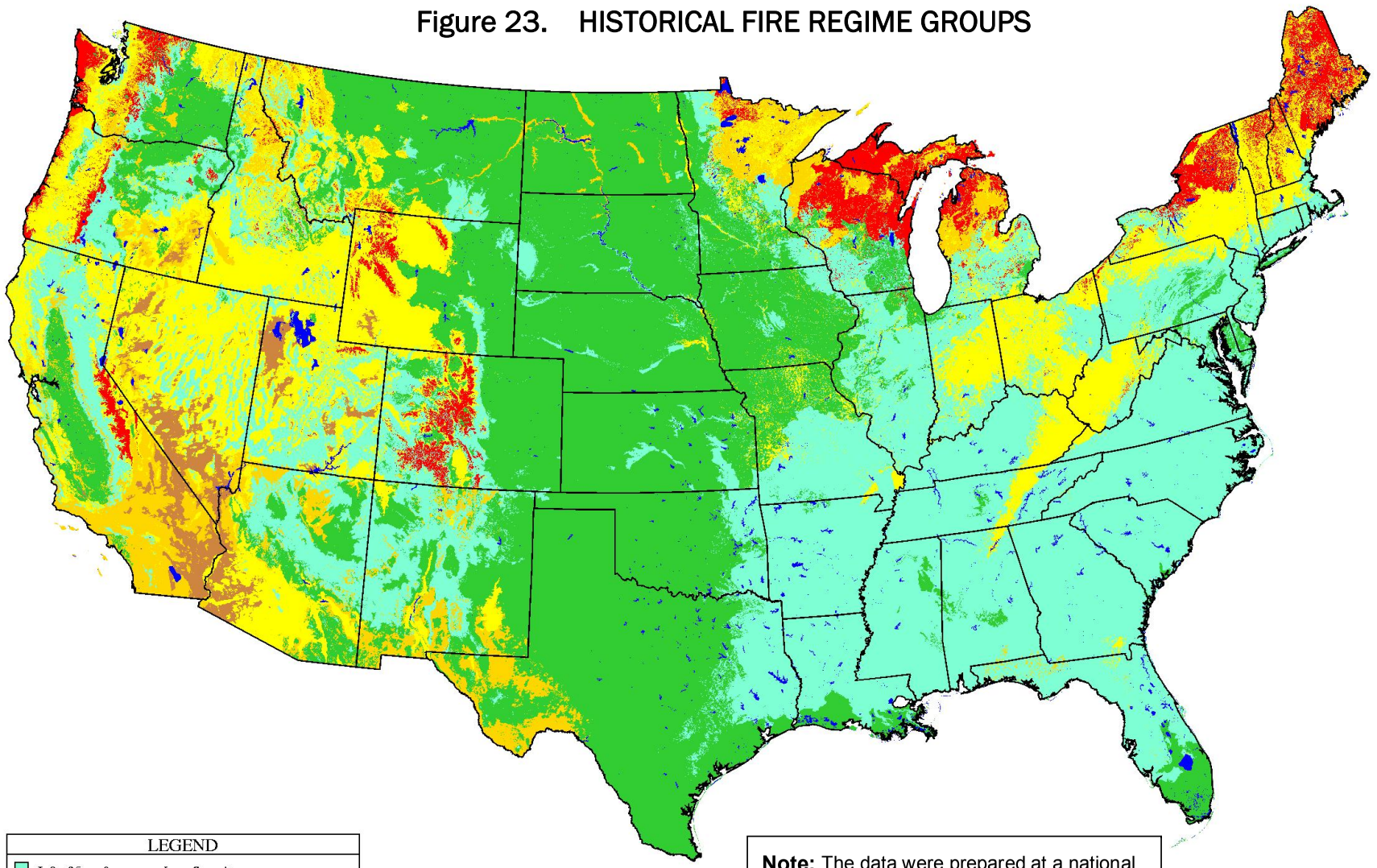
FIRE REGIME GROUPS

Fire Regime Group	Fire Frequency	Fire Severity	Percent of (Coterminous) Federal Lands	Examples of Vegetation Types
I	0-35 years	Low severity	31%	oak-hickory, longleaf pine, interior West ponderosa pine
II	0-35 years	Stand replacement severity	13%	Sierra foothill grasslands, Texas savanna, tallgrass prairie
III	35-100+ years	Mixed severity	36%	Southwest Oregon mixed conifer, Appalachian oak-Northern hardwood
IV	35-100+ years	Stand replacement severity	14%	Northern hardwoods of New England, Southern California chaparral, Great basin sagebrush
V	> 200 years	Stand replacement severity	6%	Pacific Northwest western hemlock, Rocky Mountain subalpine fir

A fire regime is a generalized description of fire's role within a vegetative community—characterized by fire frequency, predictability, seasonality, intensity, duration and scale. Five combinations of fire frequency—based on fire return interval and fire severity—are the basis for the coarse-scale assessment's five Fire Regime Groups.

Table 2

Figure 23. HISTORICAL FIRE REGIME GROUPS



Note: The data were prepared at a national scale for use in national and regional level assessments. The data are not suitable for project or land use planning.
Source: Adapted from Schmidt, et al., 2002.

Relative Ranking of Wildfire Risk to Ecosystems by Fire Condition Class

Based on the coarse-scale national data, fire regime condition classes serve as generalized wildfire risk rankings. The risk of loss of desired ecological conditions due to unwanted wildland fire increases from Fire Condition Class 1 (lowest risk) to Fire Condition Class 3 (highest risk) within a given fire regime.

At historically characteristic fire intensities:

- Desirable post fire recovery mechanisms continue to function.
- Fire can be ecologically beneficial because nutrients are recycled.

The Strategy places a greater emphasis on hazardous fuels reduction and maintenance treatments within those areas most prone to fire occurrence, specifically within Fire Regime Groups I, II, and III. Those areas have experienced the greatest change from historical conditions due to fire exclusion. Thus, they are most likely to respond favorably to treatments designed to reduce hazardous fuel, thereby reducing the risk from uncharacteristically severe wildland fires.

Fire Condition Class 1

Fires burning in Fire Condition Class 1 areas generally leave the soil intact and functioning normally. These fires usually pose little risk to natural resources. They have positive effects to species diversity, soil productivity, and water quality. Some species require fire for their existence and regeneration; other species have developed adaptations to withstand periodic fires.

Maintenance of vegetation in Fire Condition Class 1 through management actions such as prescribed fire, mechanical treatments, wildland fire use, or preventing the invasion of non-native weeds, is required to prevent these lands from slipping into Fire Condition Classes 2 or 3.

Fire Condition Class 2

Fire Condition Class 2 develops when fire return intervals are missed and understory vegetation continues to grow and becomes denser. They likewise can develop when highly flammable, non-native species replace become established and reduce fire return intervals.

If the accumulating vegetation or the invasions of woody or non-native species are not treated, fires begin to burn more intensely, making them even more difficult to suppress. The impact of these fires on species diversity, soil productivity, and water quality becomes more pronounced.

Fire Condition Class 2 is classified as moderate risk because of the increasing danger it poses to people and the damage that can result to species habitats and soils when a fire burns on these lands—particularly during drought years.

Fire Condition Class 3

In Fire Condition Class 3 areas fires are relatively high risk. In drought years outside of grasslands, small trees, brush, and other vegetation dry out and burn with accumulated dead surface material fueling severe, high intensity wildland fires. At these intensities, wildland fires have the potential to kill all vegetation, even the large trees that—at lower fire intensities—would normally survive.

Fire frequency is further increased in Fire Condition Class 3 areas dominated by highly flammable non-native species. Within these areas, a new fire cycle may become established resulting in the exclusion of native species and further expansion and domination by non-native species.

In a 1996 national survey (Wildland Firefighter Safety Awareness Study, Tri-Data), nearly 83% of all firefighters identified fuel reduction as the single most important factor for improving their margin of safety on wildland fires.

Within Fire Condition Class 3 in Fire Regimes I, II, and III, high-intensity fires can consume the soil's organic layer and burn off or volatilize nutrients. When all small twigs, dead leaves and needles, and other organic litter are consumed, water runs unimpeded over the soil surface. Under these circumstances, the soil becomes more susceptible to erosion. At extreme fire intensities, the soil's capacity to absorb water is often lost. The fine, powder-like ash that follows a severe wildland fire on these sites produces a water beading process on the surface. These so-called "hydrophobic conditions" result in highly erodible soils.

Fire Condition Class 3 is classified as high risk because of the danger it poses to people and the widespread, long-lasting damage likely to result to species and watersheds when wildland fires burn on these lands—even during non-drought years. Firefighters are especially cognizant of the hazards in Fire Condition Class 3 situations.

Figure 24a. Open ponderosa pine stand maintained by frequent low-severity fire is dominated by large trees. Stand is resilient to disturbances such as insects and disease outbreaks. (FCC 1)

← Fire Condition Class 1 →

For the most part, fire regimes in this Fire Condition Class (CC1) are within historical ranges. Thus, the risk of losing key ecosystem components (such as soil, vegetation and water quality) from the occurrence of fire remains relatively low. Maintenance management such as wildland fire use, prescribed fire, mechanical treatments, or preventing the invasion of non-native weeds is required to prevent these lands from becoming degraded.

← →

Figure 24b. Wyoming big sagebrush type with considerable diversity is generally more resilient to disturbance and provides habitat for a great number of species. (FCC 1)

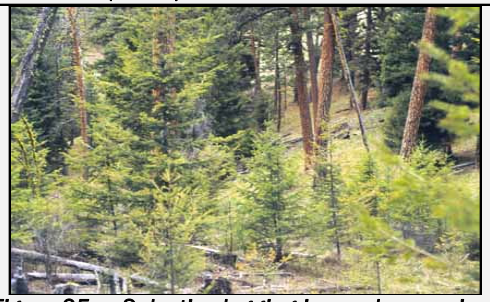


Figure 25a. Selective logging in ponderosa pine stands progressively removed the larger trees. Without periodic fire, forest openings filled with thickets of smaller understory trees. (FCC 2)

← Fire Condition Class 2 →

Fire regimes on these lands (CC2) have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components (such as soil, vegetation and water quality) has been identified in these lands. To restore their historical fire regimes, these lands may require some level of restoration through prescribed fire, mechanical or chemical treatments, and the subsequent reintroduction of native plants.

← →

Figure 25b. Wyoming big sagebrush type where fire has been excluded for an extended period has reduced diversity and provides habitat for fewer species. The site is also vulnerable to future cheatgrass invasion and to wildland fire. (FCC 2)

Figure 26a. The dense thickets of understory trees eventually become sufficiently large enough to allow fire spread into the ponderosa pine crowns. The thickets are drought-prone. (FCC 3)

← Fire Condition Class 3 →

These lands (CC3) have been significantly altered from their historical range. The risk of losing key ecosystem components (e.g., soil, vegetation and water quality) from fire is high. Consequently, these lands are at the greatest risk of catastrophic, destructive wildland fires. To restore their historical fire regimes—before prescribed fire can be utilized to manage fuel or obtain other desired benefits—these lands may require multiple mechanical or chemical restoration treatments, or reseeding.

← →

Figure 26b. Rangeland sites entirely dominated by cheatgrass—unlike the native vegetation that formerly occupied this site— are highly vulnerable to fast-moving, higher-intensity wildfires. (FCC 3)

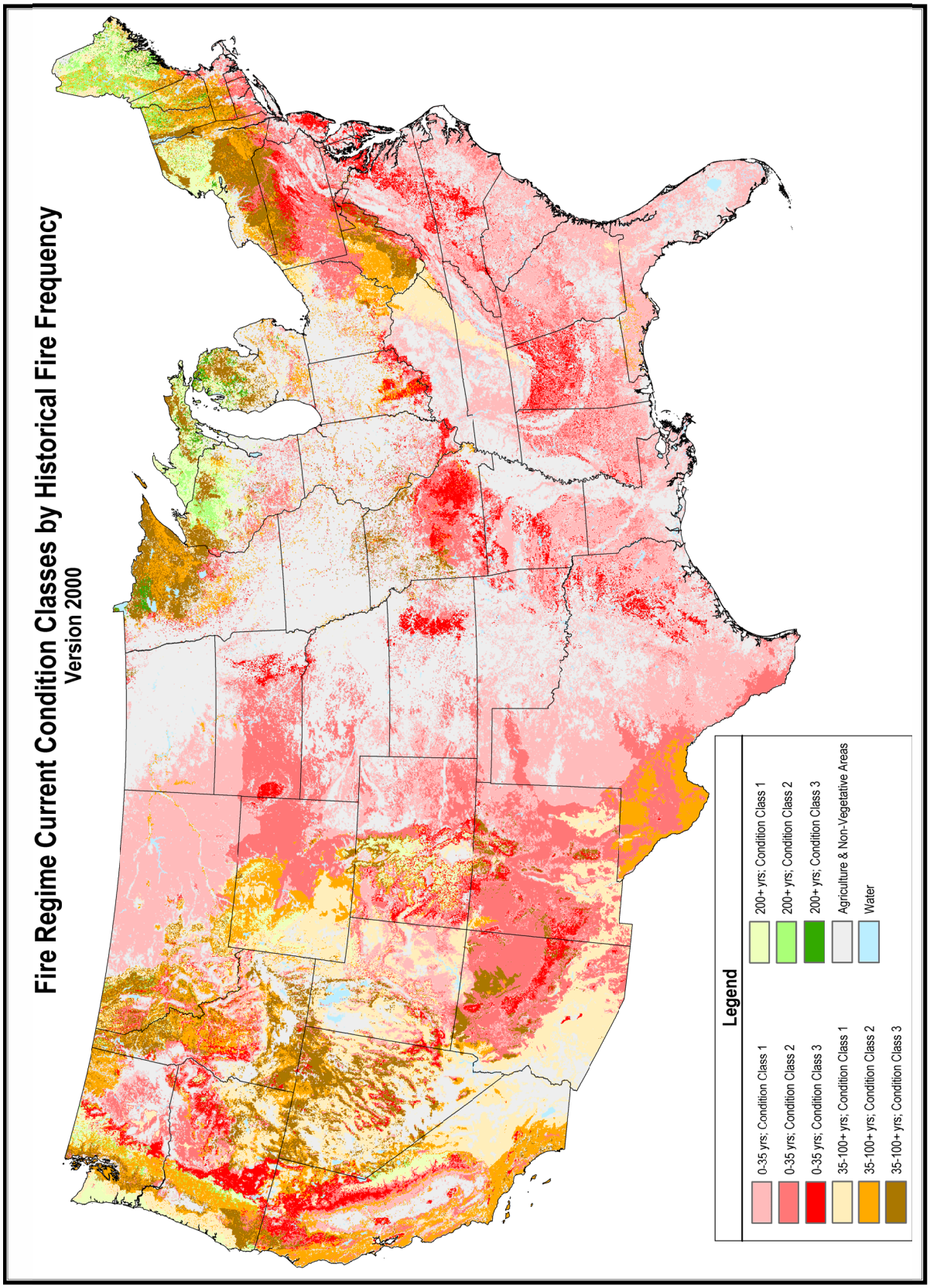

Fire Regime Current Condition Classes by Historical Fire Frequency
Version 2000
Legend
0-35 yrs; Condition Class 1
0-35 yrs; Condition Class 2
0-35 yrs; Condition Class 3
35-100+ yrs; Condition Class 1
35-100+ yrs; Condition Class 2
35-100+ yrs; Condition Class 3
200+ yrs; Condition Class 1
200+ yrs; Condition Class 2
200+ yrs; Condition Class 3
Agriculture & Non-Vegetative Areas
Water

Figure 25

APPENDIX D – STREAMLINING POLICY AND LEGISLATION

At the beginning of this decade land managers, communities, and individuals with experience in fuels management recognized that existing laws and regulations together often inadvertently prevented timely removal of fuels to prevent catastrophic fires. President Bush and the Congress, working together, took a series of policy and legislative actions that remedied many of the problems field personnel identified.

President Bush's *Healthy Forests Initiative* (HFI), announced in August 2002*,* reflects an understanding that the public interest is served by improving forest and rangeland health through fuels treatments. Similarly, it reflects the need for change in the present legal and regulatory framework to facilitate responsible stewardship of public lands. He directed that government agencies take regulatory steps to streamline administrative processes and called upon Congress to take red-tape-cutting actions.

As a result of the President's direction the executive branch took several actions to assure more timely application of high priority, collaboratively selected fuels treatments to the landscape. The Council on Environmental Quality issued guidance to the Departments of Agriculture and Interior regarding preparation of Environmental Assessments (EAs) for fuels treatments. The guidance calls for EAs to be brief and concise. The Departments, after public comment, finalized procedures to categorically exclude certain lower impact fuels treatments from additional environmental documentation through EAs or Environmental Impact Statements (EIS)s.

The Director of the Fish and Wildlife Service and the Assistant Administrator for Fisheries of the National Oceanic and Atmospheric Administration issued new guidance to streamline interagency consultation processes required by the Endangered Species Act. The guidance instructs agency reviewers to consider the long-term benefits of proposed fuels treatment projects as well as their short-term impacts when evaluating their effects on threatened or endangered species. In addition, both Departments addressed aspects of their administrative appeals process.

Congress authorized stewardship contracts for the Forest Service (FS) and Bureau of Land Management (BLM) and passed the Healthy Forests Restoration Act (HFRA). HFRA improves the ability of the FS and BLM to remove hazardous fuels in a timely manner by limiting the scope of NEPA analysis needed for certain fuels treatments when preparing an EA or EIS. The Act also urges expedited judicial review of challenged projects and requires legal action take place in the Federal court district that houses the project.

In 2005, approximately 400,000 acres of fuels treatments will employ the new tools created by the HFI and HFRA to satisfy the analytic requirements of the National Environmental Policy Act (NEPA), a figure that will increase in over time.

Appendix E — Relationships between Major Wildland Fire Reports and Initiatives

Initiative/Report	What it does	Relationship to other initiatives
Federal Fire Policy *1995 Federal Wildland Fire Management Policy and Program Review.* December 1995	A response to the tragic fires of 1994. Key elements include: (1) reaffirming that protection of life as the first priority, (2) recognizing wildland fire as a critical natural process, (3) requiring fire management plans be developed for all burnable acres, (4) requiring fire management decisions be consistent with approved land and resource management plans, and (5) clarifying the role of Federal agencies in the wildland urban interface.	First national wildland fire policy document
Report to the President -- *Managing the Impact of Wildfires on Communities and the Environment.* September 2000	Response to a Presidential request. Provides recommendations to the Departments of Agriculture and Interior on how best to respond to the severe fire season of 2000. Makes key recommendations, among them: (1) provide additional firefighting resources, (2) restore fire damaged landscapes and communities, (3) increase efforts to remove hazardous fuels, and (4) work directly with local communities to improve community fire-fighting capacity and coordination, implement restoration and fuel reduction projects, and expand education and risk mitigation efforts in the WUI.	Provided the basis and conceptual framework for the National Fire Plan, and the 10-Year Comprehensive Strategy – this document was also know as the National Fire Plan, a term which now is often used in conjunction with it and later actions like the Healthy Forests Initiative.
10-year Comprehensive Strategy August 2001	A coordinated ten-year strategy to comprehensively manage wildfire, hazardous fuels, and ecosystem restoration. Developed in collaboration with governors and in consultation with a broad range of stakeholders. Scope includes Federal and adjacent State, Tribal, and private lands. Primary goals are: (1) improve prevention and suppression, (2) reduce hazardous fuels, (3) restore fire adapted ecosystems, and (4) promote community assistance. Core principles of the strategy: priority setting, collaboration, and accountability.	Extends concepts of the President's report and focus of the National Fire Plan into a broader, longer-term, collaborative effort.

Relationship between Major Wildland Fire Reports and Initiatives

Initiative/Report	What It Does	Relationship with other initiatives
Implementation Plan, 10-year Comprehensive Strategy May 2002	Identifies 22 specific tasks to achieve the four goals identified in the 10-year Comprehensive Strategy; and performance measures that are interagency and interdepartmental in scope. Developed in collaboration with governors and in consultation with a broad range of stakeholders. Emphasizes a collaborative, community-based approach to address wildland fire related issues.	Translates the conceptual framework of the 10-year Comprehensive Strategy into specific actions identifying timeframes for completion.
Healthy Forests Initiative (HFI) - *Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities* August 2002	Presidential initiative to better protect people and natural resources by lowering the procedural and process hurdles that impede the reduction of hazardous fuels on public land, and to fulfill the original objectives of the Northwest Forest Plan. The initiative has legislative and administrative components. The administrative actions include: (1) create a uniform categorical exclusion for certain fuel reduction projects usable by all Federal land managing agencies, (2) streamline the appeals process within the existing administrative appeals frameworks, and (3) streamline the EA documentation process, and (4) better coordinate Endangered Species Act consultations. The legislative proposal called for: (1) allowing agencies to enter into stewardship contracts, (2) further streamlining of NEPA analytic requirements, and (3) assure judges consider balance of harm between short and long term impacts of fuels treatments when considering any request for injunctive relief.	HFI speeds implementation of projects, improves implementation of the NFP and the 10-year Comprehensive Strategy. Legislative proposal requires use of a collaborative process consistent with the Implementation Plan for the 10-year Comprehensive Strategy.
Healthy Forests Restoration Act Became law December 2003	Earlier Congress had given stewardship authority to the Forest Service (FS) and the Bureau of Land Management (BLM) partially fulfilling a request within HFI. With HFRA, Congress addressed other issues raised in HFI and contains other changes. HFRA applies chiefly to FS and BLM. Its major provisions include: (1) a streamed EA process for fuels treatments and other activities that would remove hazardous fuels from public lands, (2) incentives for States and local communities to prepare Community Wildfire Protection Plans, (3) measures to expedite judicial review of challenges to the conduct of fuels treatment projects, and (4) a requirement the judges consider the consequences of delaying or preventing of a fuels treatment compared to the impacts of conducting the treatment.	Implemented many of the legislative proposals in the Healthy Forests Initiative

APPENDIX F – GLOSSARY

Adaptive Management
A type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management combines planning, implementing, monitoring, research, evaluating, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify future management methods and policy.

Biomass
The trees and woody plants, including limbs, tope, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment, that are the by-products of management, restoration and/or hazardous fuel reduction treatment.

Biomass (Biomass Residue)
Organic matter that can be used to provide heat, make fuel, and generate electricity. Wood, the largest source of biomass, has been used to provide heat for thousands of years. Other sources of biomass include plants and residue from forestry.

Biomass Utilization
The harvest, sale, offer, trade, and/or utilization of woody biomass to produce the full range of wood products, including timber, engineered lumber, paper and pulp, furniture and value-added commodities, and bio-energy and/or bio-based products such as plastics, ethanol and diesel.

Ecosystem
A spatially explicit unit of the Earth that includes all of the organisms, along with all components of the abiotic community, with its boundaries.

Fire-Adapted
An organism or plant community with the ability to survive or regenerate in a fire-prone environment.

Fire Condition Class
Fire Condition Classes categorize and describe vegetation composition and structure conditions that currently exist within the Fire Regime Groups, compared to natural potential vegetation types. These three classes serve as generalized wildfire risk rankings—based on the coarse-scale data. The risk components from unwanted wildland fire increases from Fire Condition Class 1 (lowest risk) to Fire Condition Class 3 (highest risk).

Fire Frequency (Fire Return Interval)
The average length of time between successive fire events in a given area; often expressed in terms of fire return intervals (e.g., fire returns to a site every 5-15 years, on average).

Fire Intensity
Expression commonly used to describe the heat output of wildland fires; commonly measured by the rate of energy release per unit length of the fire-front (known as the fireline intensity).

Fire-Prone
Any area vulnerable to wildland fire.

Fire Regime
A generalized description of fire's interaction with a vegetation community in a given area, characterized by fire frequency, seasonality, intensity, duration and scale (patch size), as well as regularity or variability.

Fire Resilience
The ability of a plant or animal species, or a plant or animal community, to survive fire disturbances. Resiliency is one of the properties that enables an organism or community to persist.

Fire Severity
A measure of fire's immediate effects on the biotic communities, watersheds, or geobiochemical processes. Examples include the extent of mortality and survival of plant and animal life—both above and below ground, the loss of organic matter, soil loss and erosion potential.

Forest Health
A forest is in a healthy condition when abiotic and biotic influences on the forest do not threaten resource management objectives now or in the future.

Hazardous Fuel
Excessive live or dead wildland fuel accumulations that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.

Interagency Wildland Fire Policy
The Federal Wildland Fire Management Policy and Program Review was chartered by the Secretaries of the Interior and Agriculture to ensure that Federal policies are uniform and programs are cooperative and cohesive. For the first time, one set of Federal fire policies will enhance effective and efficient operations across administrative boundaries to improve the capability to meet challenges posed by current wildland fire conditions.

The policy review team reexamined the role of fire in ecological processes and the costs associated with fighting fire. An interagency product has resulted in changes in terminology, funding, agency policy, and analysis of ecological processes.

Landscape
An area composed of interacting and inter-connected patterns of habitats that are repeated because of the geology, landform, soils, climate, biota, and human influences throughout the area. Landscapes are biophysical units, within larger land management planning areas.

Prescribed Fire
Any fire ignited by management actions to meet specific objectives. All prescribed fires are conducted in accordance with approved prescribed fire plans.

Rangeland Health
A rangeland is in a healthy condition when abiotic and biotic influences on the rangeland do not threaten resource management objectives now or in the future.

Restoration
Comprehensive actions taken to modify a forest, rangeland, or other vegetation type to achieve a desired state or condition. Restoration may include control of invasive species or thinning of over-dense tree stands. Typically, a combination of actions are needed to achieve restoration goals.

Risk
The probability that potential harm or undesirable consequences will be realized.

Subbasin
A drainage area of approximately 800 thousand to one million acres, equivalent to a fourth-field Hydrologic Unit Code (HUC).

Uncharacteristic Wildfire Effects
An increase in wildfire size, severity and resistance to control, and the associated impact to people and property, compared to that which occurred in the native system.

Unwanted Wildland Fire
Any wildland fire in an undesirable location or season, or burning at an undesirable intensity, spread rate or direction. Also known as *catastrophic, severe, uncharacteristically severe,* or *damaging.*

Vegetation Structure
Stage of vegetation community development that is classified on the dominant processes of growth, development, competition, and mortality.

Viewshed
The landscape that can be directly seen from one or more viewpoints or transportation corridor which has inherent scenic qualities or aesthetic values as determined by those who view it.

Watershed
1) The region draining into a river, river system, or body of water. 2) A watershed also refers specifically to a drainage area of approximately 50 to 100 thousand acres, equivalent to a fifth-field Hydrologic Unit Code (HUC). Watersheds are nested within subbasins.

Wildland Fire
Any fire burning in wildland fuels that is not a prescribed fire.

Wildland Fire Use or Wildland Fire for Resource Benefit.
The management of naturally ignited wildland fires to accomplish specific, pre-stated resource management objectives, in pre-defined geographic areas and conditions as approved in Fire Management Plans

Wildland-Urban Interface
The line, area, or zone, where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel.